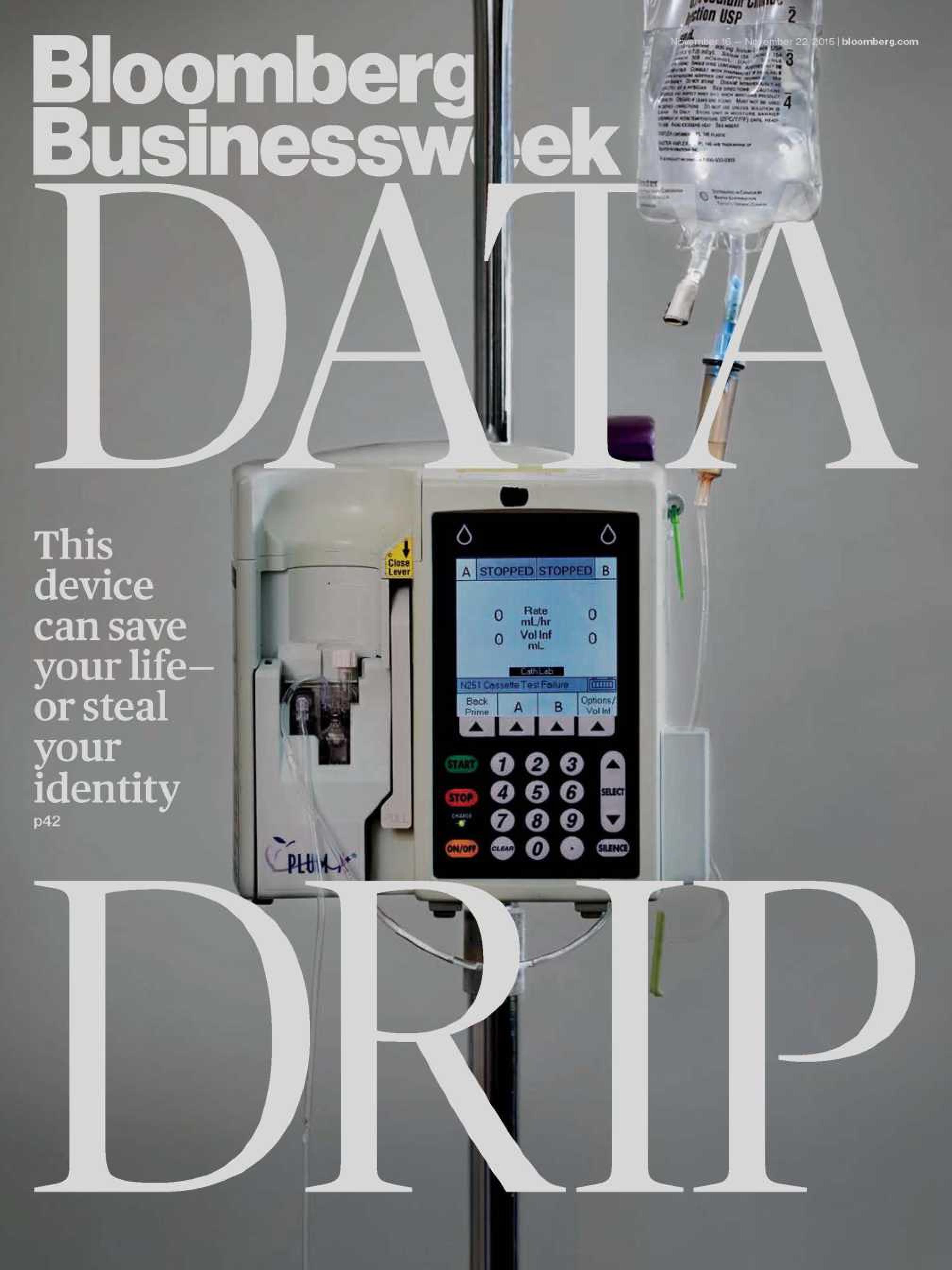
November 16 — November 22, 2015 | bloomberg.com

Bloomberg Businessweek

DATA DRIP

This device can save your life—or steal your identity

p42



Preproduction model shown. Available late Spring 2015.


Met Opera 2015-16
LIVE ON SCREEN IN CINEMAS
Il Trovatore
Verdi
OCT 3
Encore Oct 7
Otello
Verdi
OCT 17
Encore Oct 21
Tannhäuser
Wagner
OCT 31
Encore Nov 4
Lulu
Berg
NOV 21
Encore Dec 2
The Magic Flute
Special 10th Anniversary Encore Presentation
DEC 19
Les Pêcheurs de Perles
(The Pearl Fishers) Bizet
JAN 16
Encore Jan 20
Turandot
Puccini
JAN 30
Encore Feb 3
Manon Lescaut
Puccini
MAR 5
Encore Mar 9
Madama Butterfly
Puccini
APR 2
Encore Apr 6
Roberto Devereux
Donizetti
APR 16
Encore Apr 20
Elektra
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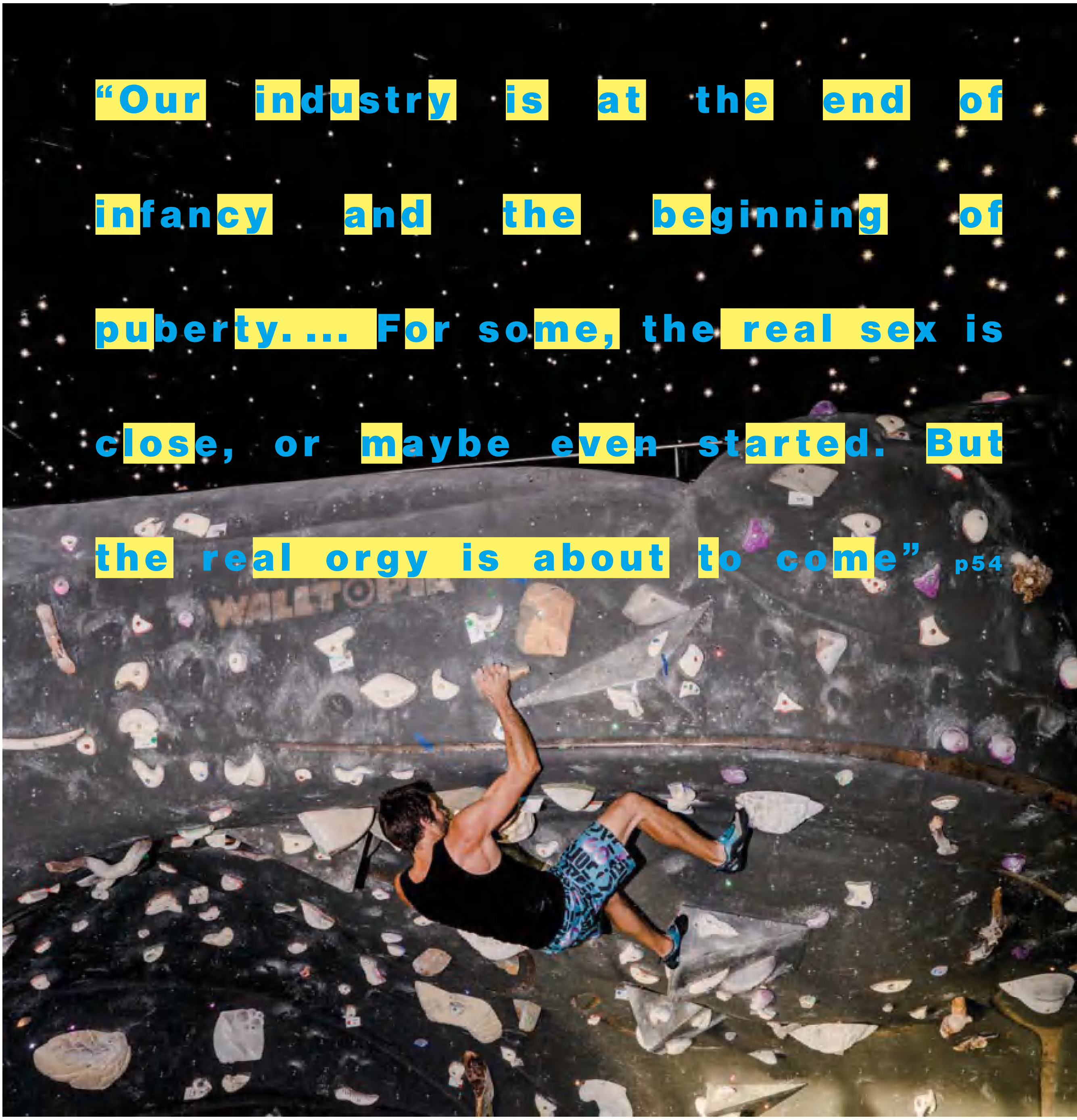

PHOTOGRAPH BY GUY MARTIN FOR BLOOMBERG BUSINESSWEEK

Bloomberg Businessweek

November 16 — November 22, 2015

Cover Trail

How the cover gets made

1

"The cover story is about hacking."

"I'm pretty sure we've covered all the different kinds of hacking: government hacking, Nasdaq hacking, Target hacking, Sony hacking, casino hacking, phone hacking, Port of Antwerp hacking, even strawberry hacking. What's left?"

"Hospitals."

"Oh, that's not good. To steal medical records?"

"Yes, some researchers are trying to prove that hackers can use certain devices to steal someone's identity and even manipulate how the device works."

"That's terrifying. What do these devices look like?"

"Like almost any device you see in a hospital."

"This keeps getting worse."

COVER AND COVER TRAIL: PHOTOGRAPH BY GRAEME MITCHELL FOR BLOOMBERG BUSINESSWEEK

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Corrections & Clarifications
"Prepare for an OK-ish 2016" (Outlook, Nov. 9, 2015-Jan. 5, 2016) misspelled the middle name of Liz Ann Sonders of Charles Schwab.

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FLOATING ABOVE THE FRAY

The complexity of moving to the cloud can frustrate businesses. Fortunately, partners can help

Simplicity, ease of use and consistency of delivery have emerged as the major selling points of the cloud, and the adoption of SaaS applications across all business functions has skyrocketed in the past decade. While standalone SaaS applications are typically easy to use and address key business challenges, they typically look, feel and act differently. And, since they're not integrated, they're increasingly unsuited to how businesses serve today's always-connected customers. One solution to this challenge lies in the flexible, cost-effective approach offered by platform-as-a-service (PaaS).

While SaaS applications are designed for business users, PaaS delivers the set of tools and services that allow for collaborative software development. It's a fast-growing product category that enables developers and businesses to create new apps quickly, extend the usefulness of existing apps and put data from the Internet of Things (IoT) and Web application programming interfaces (APIs) to work, opening the doors to business innovation.

"The whole concept of business applications is changing with the increasingly rapid adoption of open platforms," says Rob Glickman, Vice President, Audience Marketing at SAP, which recently unveiled its SAP HANA Cloud Platform, an open standards-based cloud platform designed for today's networked and data-driven business environment.

In simple terms, PaaS can be thought of as a personalization engine where users can extend applications in order to have them deliver the right information, at the right time and to the right person—essentially a better way


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for businesses and people to connect. PaaS allows organizations to quickly address their changing business needs without having to pay for expensive customizations and upgrades, or employ the custom workarounds that are common in traditional IT environments.

"The PaaS concept allows companies to extend their current software and create brand-new applications and services quickly," Glickman explains. "With PaaS, business software can be transformed to drive constant innovation for a company and their customers, and new revenue for their partners, as well."

This is important because it empowers lines of business and allows third parties to innovate and create new value, Glickman points out. A company can easily extend its business-critical applications to employees on a variety of devices, as well as combine internal applications so they can be accessed through one common interface.

For instance, using a platform-as-a-service, a company can integrate its existing HR and services procurement software to create a view of its entire workforce. This also give businesses easy access to the digital economy, and the data available from the IoT and APIs can expand the use of third-party apps to enable innovation.

"Think of the explosion of data that's now outside your business," Glickman explains. "Whether its your location, social media activity or your mobile app usage, companies now need to find the right balance between the data they have on their customers, and the external data they need in order to have a full view of that customer."

Platform-as-a-service can also be used to develop open, flexible apps—developed by companies themselves or by third parties—as well as to customize existing off-the-shelf software. "Enterprises want the ability to customize their apps easily, integrate them with other apps that may have historically been separated and siloed, and be able to do it using open, common development languages," Glickman says.

New IT technology is agile at providing solutions and services that simplify cloud adoption.

The SAP HANA Cloud Platform uses open standards to avoid vendor lock-in to any one proprietary technology, and employs languages such as Java and HTML5 so that customers can easily develop and deploy new apps, as well as tailor their current SAP applications to address their unique business needs.

"PaaS allows you to reimagine your business by opening it up to an external world that is full of the data and connected experiences from which you can create new services and products," Glickman says. "Designed to empower lines of businesses to extend and deliver customer-facing apps across departments and roles, the SAP HANA Cloud Platform is the glue that brings applications together—whether they're in the cloud, on-premise or a SaaS or managed service—to connect your enterprise."

Easing the Cloud Transition

Confronted with the daunting prospect of harnessing new technologies, many companies find that partnering with an expert service provider allows them to launch and maintain new applications more efficiently, and more cost-effectively, than they're able to do on their own.

It's the reason American HealthTech, with 30 years in the business of providing information systems to one in five post-acute care facilities across the U.S., turned to global cloud provider Dimension Data for the infrastructure it needed to ensure reliable delivery of custom software solutions to clients.

"With national healthcare reform, it became clear we needed to respond to our customers' requests for comprehensive, integrated information management solutions," says Teresa Chase, President of American HealthTech. "We made a decision to move our infrastructure to the cloud to enable solutions that simplify the seamless flow of information on clinical and financial management functions."

Like other companies that migrate processes to and implement applications in the cloud, American HealthTech was soon hooked on the experience of infrastructure as a service (IaaS), and the cloud's scalable consumption model.

"Production applications are often complex and typically labor-intensive to operate," says Shelley Perry, Chief Product Officer at Dimension Data. "By moving applications to the Dimension Data Cloud, clients are able to access our specialized skills in networking, security, consulting, professional services and other delivery models, like outsourcing and hosting. We call this Cloud Surround™, and this is where we make a difference."

Dimension Data can lower network costs to access the cloud; and by suggesting tactics to strengthen security, it can integrate the management of the cloud with the rest of a client's IT environment.

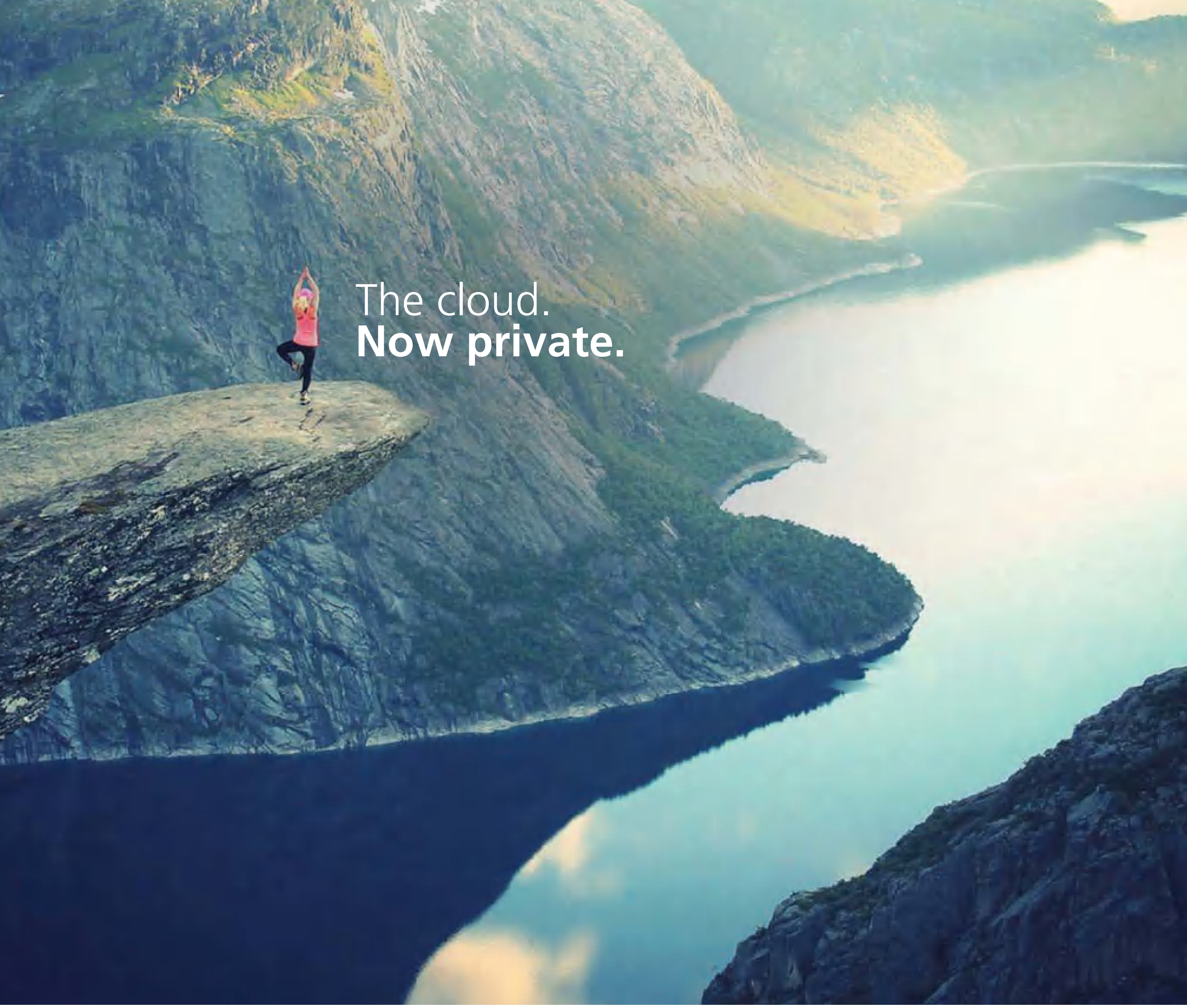
"We're experts in delivering hybrid IT," explains Perry. "Healthcare applications present some complex information security scenarios, and Dimension Data's security expertise and secure networking, combined with the security built into our cloud architecture, give our clients an advantage."

Healthland, an information technology company, acquired American HealthTech in 2013, and the merged organization has been expanding its cloud consumption to keep pace with its significant growth. Healthland Cloud Services, powered by Dimension Data, is now a major part of the combined company's value proposition to their clients. Moving to the cloud lowered costs for American HealthTech and Healthland, and, more importantly, it has improved customer satisfaction, because the cloud enables a more reliable, more predictable and faster service than the traditional environment.

"We're constantly challenged to provide solutions that enable our clients to deliver quality care at reasonable costs," Chase says. "Moving to the cloud allows us to grow while helping clients manage costs and operate efficiently."

Perry adds that Dimension Data understands the challenges faced by companies like American HealthTech when leveraging new technologies, and it can provide a full range of cloud services to suit a business's specific requirements.

"We manage from the infrastructure through the operating system to the middleware, and up through the application," Perry says. "For every cloud model, Dimension Data offers unique financials that allow customers to scale up or flex back on consumption as needed, which is perfect for a growing company that doesn't want any surprises." — *John O'Mahony*


The cloud.
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Opening Remarks

Can Money Make Big Oil Behave?

By Paul M. Barrett

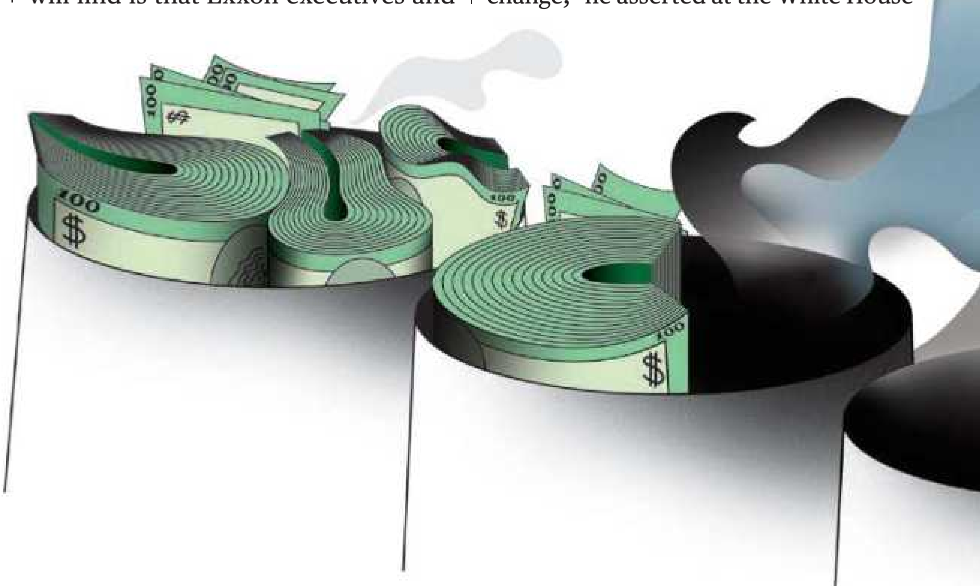
Big Oil is going through a rough patch. Prices are low and will remain so. President Obama killed the Keystone XL pipeline from Canada. And New York's attorney general is probing whether ExxonMobil withheld scientific findings that confirmed decades ago that fossil-fuel consumption contributes to global warming. At this tumultuous moment, it's worth pointing out where symbolism outweighs substance—and shed some light on an industry development that got eclipsed amid all the excitement.

Long an opponent of climate-friendly regulation, Exxon began to soften its line on the underlying science—and even embraced the need, at least in theory, to curb greenhouse gases—when Rex Tillerson succeeded Lee Raymond as chief executive officer in 2006. Nevertheless, the world's largest energy company continued to funnel millions to climate-denying members of Congress, even after a 2007 pledge to cease contributing to those, in Exxon's own words, "whose position on climate change could divert attention from the important discussion on how the world will secure energy." On Nov. 4 it received a subpoena from Eric Schneiderman, New York's AG. The prosecutor is seeking documents he suspects will show that Exxon deceived investors and the public about what it knew about climate change. (Exxon denies the allegations.) The prosecutor is also seeking a national stage for his climate stance. Schneiderman isn't talking about the probe, but predictably, others are congratulating him. "I am so proud of New York Attorney General Eric Schneiderman, because he announced that he is going to investigate Exxon," Democratic presidential candidate Hillary Clinton said at a campaign event in New Hampshire.

If he follows through on his subpoena, what Schneiderman likely will find is that Exxon executives and scientists historically made contradictory statements on human culpability for climate change—a far more mixed record than the systematic public stonewalling the tobacco industry conducted about the dangers of smoking. He'll also find that while Exxon has joined organizations that questioned mainstream climate science, such as the defunct Global Climate Coalition, Royal Dutch Shell, BP, and others did, too. The latter corporations, however, came around to conceding reality sooner and more forcefully than Exxon.

Industry ambivalence on climate regulation stems from bald self-interest: Oil companies want to continue to sell their staple product (which, by the way, the world's economies will continue to demand for the foreseeable future). Gradually, that self-interest has evolved toward a more enlightened version, as engineering- and science-based corporations have been forced to acknowledge the consensus that carbon dioxide and other greenhouse gas emissions have contributed to the earth's atmosphere—and oceans, especially—heating up. That concession doesn't mean oil producers agree with every proposed response to climate change, but they're not fighting the basic facts anymore. Navigating toward profit now requires lining up with or against the politics that emerge from popular pressure to act on climate.

As for Keystone XL, Obama framed his decision to block TransCanada's proposed 1,200-mile pipeline as a vital political signal. Debated in Congress over seven years, Keystone would have carried 800,000 barrels a day of carbon-heavy petroleum from Canada's oil sands region to refineries along the U.S. Gulf Coast. "America is now a global leader when it comes to taking serious action to fight climate change," he asserted at the White House



A pilot project in Alberta's oil sands—and not subpoenas of Exxon—could secure our future

ILLUSTRATION BY 731

on Nov. 6. "Approving this project would have undercut that leadership."

When he travels to Paris next month for the United Nations climate summit, the president will cite his nixing of Keystone, along with several other recent steps, to enhance his moral authority when pressuring fellow heads of state to agree to a global deal to limit greenhouse emissions. Reasons to view Obama's pipeline gesture with skepticism include one the president himself conceded: Blocking Keystone won't stop Canada from exporting oil to the U.S. or anywhere else, for other pipelines and rail routes already exist. Keystone "has become a symbol too often used as a campaign cudgel by both parties rather than a serious policy matter," Obama said.

The thousands of jobs Keystone backers heralded mostly would have been in construction and ancillary fields such as food services; they'd have lasted for only the two years or so it would have taken to finish the pipeline. Permanent staffing, by contrast, would have been measured in the dozens. On the other hand, Keystone's absence won't arrest development of Canada's unusually viscous form of petroleum, known as bitumen. Even at today's relatively low price of about $50 a barrel, oil sands projects are "cash positive," says Shell's CEO, Ben van Beurden. (That may be true for existing mines, but if Keystone had been built and lowered transportation costs, oil sands operations likely would have expanded more swiftly.)

It would be terrific if Obama could help steer the Paris conference toward progress, but aspirational goals for carbon reduction—if even those can be agreed on—won't have much real effect unless they're accompanied by policies that help achieve the goals. The most significant such policies would impose a per-ton price on carbon emissions, via either cap-and-trade rules or direct taxes.

A price on carbon in the U.S. and around the world would unleash market forces to reduce emissions. Greenhouse-intensive energy sources such as coal would become less economical. And industry would have a dollars-and-cents incentive to experiment with technologies that could reduce the climate impact of continued use of fossil fuels.

Which brings us to carbon capture and sequestration—CCS for short—technology that's been around for decades and involves pricey methods to reduce emissions from power plants and petroleum refineries. With inadvertent bad timing, Shell chose the same Friday morning Obama announced his Keystone death sentence, Nov. 6, to hold a gala valve-turning ceremony for a CCS project linked to the Athabasca oil sands operation in Alberta. A tangle of pipes, stacks, and scaffolding that a layman's eye can't distinguish from the rest of a vast refining facility, the Quest CCS initiative is designed to separate out and safely store underground more than 1 million tons of carbon dioxide annually. This is CO_2 generated during the initial process of refining bitumen for transportation. One million tons is a significant amount—equal to the annual emissions of some 250,000 cars—but Quest demonstrates that CCS isn't a panacea. The Shell project removes only one-third of the CO_2 produced by the company's bitumen upgrader; that means the other two-thirds, equivalent to what comes out of 500,000 cars a year, will still head skyward.

Limited though it may be, Quest shows that with the right incentives in place, CCS can happen. Alberta imposes an $11.25-a-ton carbon price, which Van Beurden says constitutes a helpful, if too gentle, kick in the pants to reduce emissions. More salient, the governments of Alberta and Canada provided $650 million in subsidies to get Quest built. The U.S. Department of Energy chipped in $500,000 more for safety monitoring of the carbon, buried a mile and a quarter underground.

Fifteen mostly new CCS projects, including Quest, now operate around the world, Van Beurden notes. The technology won't take off, though, in the absence of either flat-out government subsidies or a system of carbon pricing at $60 to $80 a ton, which at present doesn't seem likely. "We don't make money out of sticking CO_2 in the ground," he says, "so the only way you can do it is to somehow create a price on emitting the carbon."

Ponder that for a moment: The CEO of an oil multinational asking for government imposition of substantial levies so he's forced to invest shareholder money in environmental protection. In a joint public statement in June, major European-based oil and gas companies BG Group (which Shell is acquiring), BP, Eni, Statoil, and Total joined with Shell to call for carbon pricing. Less forward-thinking American rivals such as Chevron and Exxon didn't add their voices to the rallying cry.

Will New York's investigation of Exxon nudge it to join the cause? Seems unlikely. Singling out Exxon for potential prosecution might cheer environmentalists, but it won't move us toward a carbon price. It's strange and too bad that while Shell was pointing the way toward real progress in chilly Alberta, so much attention was being devoted to posturing in New York and Washington. B

To read Adam Minter on China's Singles Day deals and Justin Fox on the unicorn era, go to
Bloombergview.com

A Bad Way to Make Banks Safe

New reforms require a lot of coordination from countries and institutions in times of crisis

Global regulators say they're making progress in reducing the threat the world's largest banks can pose to the economy. In truth, their new rules may make things worse.

Regulators want to create a second layer of protection against financial disaster, beyond the equity that comprises the banks' first line of defense against losses. It would consist of a special kind of long-term debt, issued by financial holding companies to investors willing and able to bear losses. The idea is that if a big bank came to the edge of insolvency, regulators could convert the debt into equity, using it to shore up myriad subsidiaries around the world without using taxpayer money. In principle, this is fine. In practice, it may not be.

The Financial Stability Board, an international regulatory body, specified that systemically important banks must have a total loss-absorbing capacity of at least 6.75 percent of assets (including "bail-in-able" debt that could be imposed on bondholders, writing off what they're owed). On Oct. 30 the Federal Reserve proposed a higher minimum of 9.5 percent for U.S. banks—4.5 percent debt and 5 percent equity. Although the rules won't take effect for several years, Standard & Poor's said that it might cut some big U.S. banks' credit ratings this year, on the grounds that they will be less likely to receive taxpayer support.

This mechanism has some serious flaws. It won't be tested until the next crisis comes, so it will take regulators into uncharted territory just when certainty is crucial. Recapitalizing a global institution requires authorities in various countries to cooperate—something they're unlikely to do, particularly if markets are moving too fast to assess banks' capital needs. Even if such coordination were possible in the case of a single bank, it's hard to imagine it working in a crisis like that of 2008, when many were failing simultaneously.

Given the uncertainties, one must ask: How is this better than simply requiring banks to have more equity in the first place? Equity absorbs losses without requiring regulators to trigger bail-ins or strike cross-border agreements. Banks need more of it.

The two-tier system adds complexity and allows banks to keep operating with too little capital. Worse, by requiring banks to issue more debt, it might prompt some to reduce their ratio of equity to assets. This added leverage will leave the system more susceptible to distress in bad times.

True, regulators need a mechanism to deal with big banks that burn through their capital. When pressed, though, they recognize that the bail-in-able debt is needed to compensate for a first layer of loss absorption that's still too thin. To make the system safer, keep things simple.

Vouchers for Voters? It's Worth a Try

They may not overcome the huge money from super PACs, but they might help underdogs

On Nov. 3, a day after campaign-finance crusader Larry Lessig dropped his bid for the presidency, Seattle became the first U.S. city to adopt a law that he's been seeking for years: publicly funded vouchers for political candidates. Seattle's experiment will show whether it's viable.

Under Seattle's law, the city will mail four $25 vouchers to each voter, who can direct them to any candidate running for local office, including mayor and city council. The catch is: To accept the vouchers, candidates must limit their spending.

Spending limits may do candidates and voters more harm than good—and if the proliferation of super PACs reaches the local level, the limits will be rendered moot. Nevertheless, the goals of the law are worthy: helping those with limited access to money mount viable campaigns and reducing the power of special interests and the time candidates must spend fundraising.

Other cities have adopted campaign-financing programs that match private contributions with public dollars. In New York City, for instance, a $175 contribution to a candidate nets that candidate $1,050 in public money. But only a tiny percentage of citizens make donations. In Seattle every voter will be able to make donations—and that could prove problematic.

To pay for the vouchers, voters passed a property tax increase that will generate about $6 million for each city election. That's significant but only a fraction of the $41 million that would be necessary if every voter were to use vouchers. It's odd, to say the least, that a program designed to increase public participation in campaigns is counting on low participation.

Corruption could also sour voters on the idea. Campaigns will inevitably try to game the system. Even the mailing of vouchers could be problematic: Voter registration rolls are notoriously out of date. The agency responsible for enforcing the law will need to be vigilant about fraud and abuse. Ⓑ

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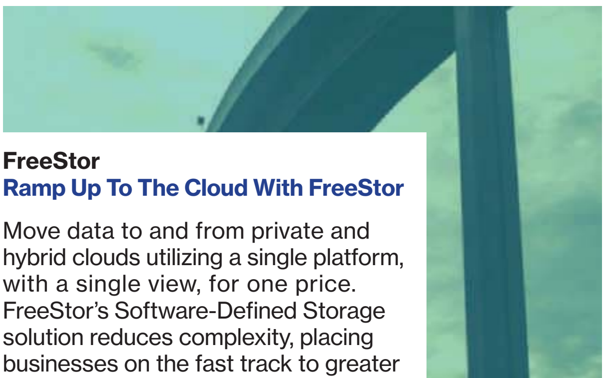

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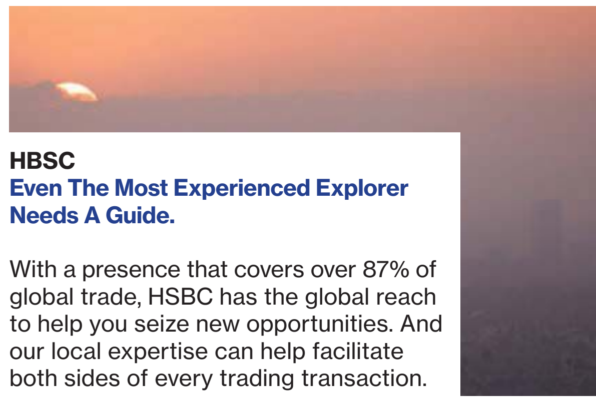

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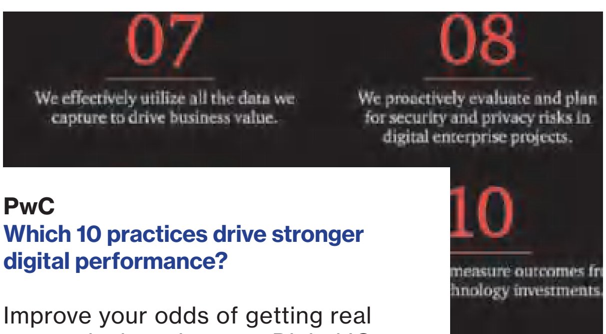

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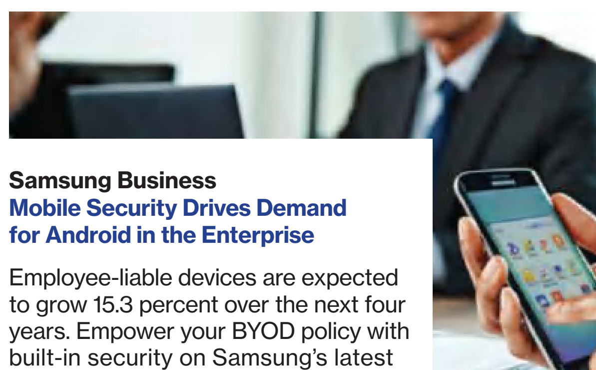

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Wages Bo

▶ After years of little or no raises, some industries are starting to pay more

▶ "They're wanting more money. They're getting multiple offers"

America may finally be getting a decent raise. A range of data suggests the demand for labor has risen enough to compel some employers to pay more to retain or hire workers. Although the gains are modest, they should broaden and speed up as unemployment falls further and competition intensifies for quality labor. "Wage growth is slowly accelerating," says Mark Zandi, chief economist at Moody's Analytics. "By the end of next year, we should be closing in on 3 percent growth," compared with the average 2.2 percent pay raise that's been prevalent throughout most of 2015.

According to data from the U.S. Bureau of Labor Statistics, construction is showing the strongest job growth for the 12 months through October this year, up 3.8 percent, compared with 2 percent across all categories. Professional services—which includes jobs in architecture, computer systems design, and legal services—comes in second with 3.5 percent growth, the data from the BLS show.

That's good news, because these gains are in industries that pay well: Construction workers made $27.54 an hour in October, based on U.S. Department of Labor data. That's up 2.6 percent from the year before. Professional and business-services workers earned $30.30 hourly, up 3 percent. For all workers, average hourly earnings came in at $25.20.

A steady drop in the unemployment rate is giving economists confidence that a turn to higher wages may be for real. There are now just 1.5 unemployed job seekers for every opening. That's down from a high of 6.8 in 2009 and is below the level that prevailed at the end of the last economic expansion, in December 2007. "You've got the economic fundamentals that say we should get higher wages," says Brian Jones, senior U.S. economist at Société Générale in New York, referring to the decline in surplus workers.

In an obvious sign of improvement, the Labor Department's gauge of average hourly earnings for jobs of all categories posted a 2.5 percent gain in October after years of stagnating near 2 percent. This is the best reading since 2009

ERIC HOOD/GETTY IMAGES

Back

and came as a positive surprise.

Anecdotal evidence bears out the data. **Turner Construction**, which has 45 offices throughout the U.S. and hires from 325 to 350 recruits out of college each year to be field engineers and other kinds of managers, has in the past two years seen stiffer competition for workers and is paying more in response, says recruiting director Katie Igoe. "Is the competition greater? Absolutely. They're wanting more money. They're getting multiple offers," she says.

This is a welcome turn of events for Federal Reserve Chair Janet Yellen and her colleagues at the Fed as they contemplate whether the economy is strong enough to handle the first interest rate increase since 2006. The Fed has a dual mandate of maximizing employment and stabilizing prices, and Yellen has said wage gains would add to her confidence that inflation will pick up to the 2 percent range that will help support economic growth.

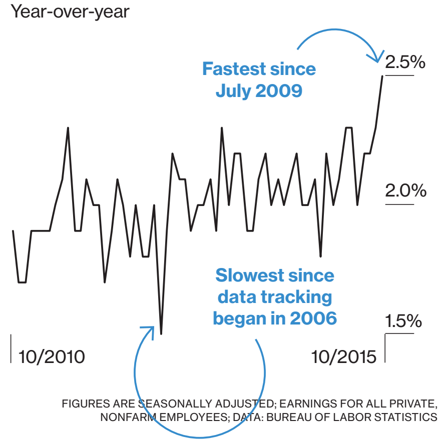
Yet the positive data must still be read prudently, says Tom Gimbel, chief executive officer of Chicago-based staffing company **LaSalle Network**. "What we're seeing are increases in specific positions and specific areas," he says. "It's not across the board."

The BLS's Employment Cost Index tells a cautionary tale. It measures employer-paid taxes such as Social Security and Medicare in addition to the costs of wages and benefits, so it's a good proxy for wage trends. After a strong gain of 2.6 percent at the start of 2015 stoked hopes of a pay pickup, the index has fallen to 2 percent growth, the rate of change that has mostly prevailed since 2010. A robust increase in labor productivity—which can drive wage gains when output per employee increases substantially—is missing. Gains in productivity, or the dollar value of goods and services that a worker produces in one hour, have averaged 1.3 percent since 2007, compared with 2.2 percent during the 1990s. That means pay increases probably aren't headed for the heights seen in prior recoveries, says Roberto Perli, a partner at Cornerstone Macro, an economics research firm.

Wages do seem poised to accelerate, though. "You add up all the tea ▶

U.S. average hourly earnings growth

Year-over-year



FIGURES ARE SEASONALLY ADJUSTED; EARNINGS FOR ALL PRIVATE, NONFARM EMPLOYEES; DATA: BUREAU OF LABOR STATISTICS

◀ leaves, and it's starting to look like a labor market that's pretty close to full employment," says Peter Hooper, chief economist for Deutsche Bank Securities in New York. "You would expect to begin to see some wage movement." —*Jeanna Smialek and Rich Miller*

The bottom line Economists are looking for wage gains of close to 3 percent by the end of 2016 as unemployment drops further.

Subsidies

The House of Saud Spreads the Wealth

▶ **The kingdom shields its people from the effects of low oil prices**

▶ **"Directly, the cuts are not going to affect a typical household"**

Spend the afternoon strolling through Riyadh's shiny shopping malls or an evening at one of its luxury restaurants, and you'd never guess there's an oil slump. That's not an accident. It's Saudi policy in action.

Sharing the oil wealth with the public has helped keep the Al Saud family securely in power as turmoil sweeps the region. When oil revenue slows, as it's doing now, the kingdom's rulers run huge budget deficits rather than risk tampering with that bedrock social contract. To maintain its social policies, the government plans to raise $27 billion on the bond market by yearend.

Eventually, economists say, something has to give. The International Monetary Fund predicts a fiscal gap exceeding 20 percent of gross domestic product this year, a rate that would deplete Saudi government savings in five years. On Oct. 30, Standard & Poor's cut the country's credit rating one level, to A+.

Even as it trims spending on projects and payments to contractors, the world's top oil exporter is making sure most of its citizens don't feel the pinch. "Directly, the cuts are not going to affect a typical household," says Farouk Soussa, London-based Middle East economist at Citigroup. They probably won't touch "the social safety net, the welfare transfers, or any of the social expenditures the government undertakes." If anything, the government's largesse increased this year. After King Salman ascended the throne in January, he handed out two-month salary bonuses to all state employees as part of a package costing about $30 billion.

With that money coursing through the system, the Granada Center mall in Riyadh, the capital, has remained packed. Sales staff at **MAC Cosmetics** ask customers to form lines outside the store, and employees say business has never been better. In the same mall, the **Starbucks** is doing a brisk business as separate lines of male and female customers press forward to get their lattes before the call for the daily Maghrib sunset prayer begins and the cafe has to stop serving for a time.

Across the $630 billion economy, average monthly retail sales are up more than 10 percent this year. They dropped 3.5 percent from a year earlier in September, though that was partly caused by the Eid religious holiday, when the country shuts down for several days. Last year the festival was in October, and there was a similar drop. While Saudi retail stocks have declined since the oil shock began in June last year, "the sector has been more resilient than other areas of the economy," says John Sfakianakis, a Riyadh-based Middle East director at Ashmore Group, a money manager that specializes in emerging markets.

On Tahlia Street, the go-to thoroughfare for dining out in Riyadh, the restaurants are crowded. Abdulrahman al-Khathlan, founder and chairman of **AHK Group**, which has franchises for the upscale French chains Ladurée and Fauchon, says there's been a slight drop in customers this year, but he's still planning at least four new outlets in Riyadh, Jeddah, and Khobar.

Perks for Saudi citizens range from education—the government spends billions of dollars a year sending students abroad—to gasoline priced well below $1 a gallon and electricity so cheap that Riyadh residents have little incentive to switch off the air conditioning when they go away for summer holidays. Fuel subsidies alone will cost Saudi Arabia as much as $52 billion this year, or 8 percent of GDP, according to Samba Financial Group.

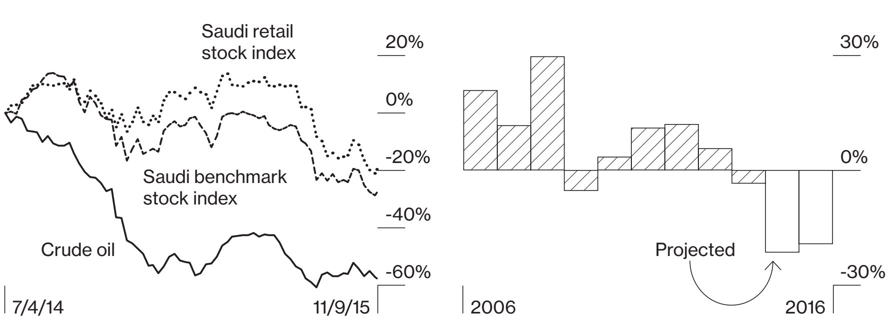
While other Gulf nations including the United Arab Emirates are scaling back subsidies, Saudi Arabia probably won't follow suit this year or next, says Fahad al-Turki, chief economist at Jadwa Investment. Oil Minister Ali al-Naimi said in a Nov. 4 press conference that the Saudi nation wasn't in dire need of removing energy assistance to its citizens.

Despite the kingdom's swing into deficit, the government keeps spending, thanks to 15 prior years of budget surpluses averaging about 7 percent of GDP. The economy will probably grow 3 percent in 2015, down from 3.5 percent in 2014, according to a Bloomberg survey of economists.

Government spending has been

The Downside of Lavish Social Spending

Saudi Arabia's share-the-wealth policies have buoyed retailers but put the government in a hole



BUDGET BALANCE EXPRESSED AS THE DIFFERENCE BETWEEN GENERAL GOVERNMENT REVENUE AND EXPENDITURES AS A PERCENTAGE OF GDP; DATA: COMPILED BY BLOOMBERG, INTERNATIONAL MONETARY FUND

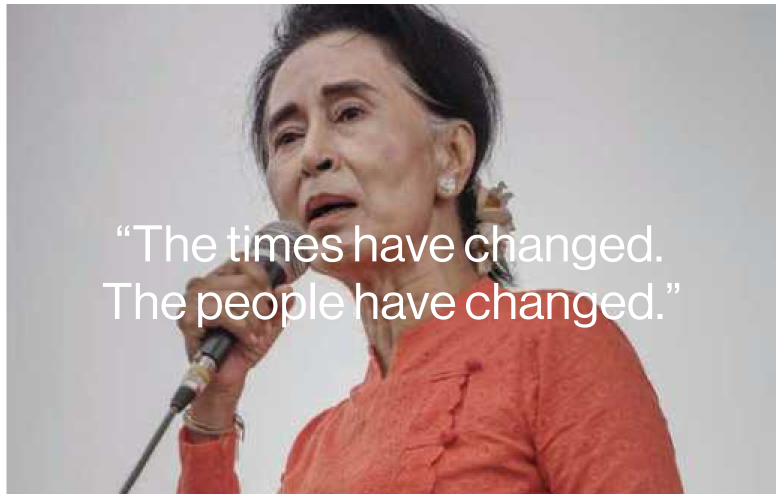
FROM TOP: JONAS GRATZER/LIGHTROCKET/GETTY IMAGES; CELIA PETERSON/GETTY IMAGES

central to Saudi efforts to avoid contagion from the 2011 Arab Spring. That year, King Abdullah allocated $130 billion to create jobs, build homes, and raise salaries. The economy grew 10 percent partly as a result of all the stimulus.

Abdullah's brother and successor, Salman, has reshuffled the kingdom's economic team, putting his son, Deputy Crown Prince Mohammed bin Salman, at the head of a new committee to oversee economic and development policy. Under Salman, Saudi Arabia has also become more assertive abroad, waging war in neighboring Yemen. With the new leadership still in transition, a radical overhaul of economic policy—introducing a personal income tax, abolishing subsidies—would be difficult to impose, says David Butter, an associate fellow at think tank Chatham House's Middle East and North Africa Program. "You need to have a very strong political center of gravity," he says. "That's perhaps the problem, because you don't really have that at the moment." *—Deema Almashabi, Vivian Nereim, and Glen Carey*

The bottom line Even while expecting a huge budget deficit, the Saudi government is spending $52 billion on fuel subsidies, or 8 percent of GDP.

Quoted



Aung San Suu Kyi, the Myanmar democracy activist, in an interview with the BBC two days after her party won general elections by an overwhelming margin

Remittances

Crossed Wires Starve Somalia of Cash

- ▶ **Antiterror restrictions prevent expats from sending money home**
- ▶ **Little suggests "it's actually curbed money laundering"**

Liban Gaal is one of an estimated 1.5 million Somalis living abroad who are helping the economy back home stay afloat. The owner of the Somali Restaurant in Windsor, Ont., says he sends $300 each month to a sister-in-law in Mogadishu whose husband died in 2008 on a smugglers' ship that capsized in the Mediterranean. Without Gaal's contribution, she and her four children wouldn't be able to get by. "When you go to Somalia, if you see people begging on the street or living in the bush, that usually means they don't have someone from the diaspora sending them money," says Gaal.

Remittances from expatriate Somalis total about $1.3 billion annually, according to the humanitarian group Oxfam International, which estimates as many as 43 percent of households depend on the transfers. That lifeline is getting squeezed as some countries step up enforcement of anti-money-laundering laws as part of a crackdown on terrorist groups. **Merchants Bank of California**, the last U.S. bank handling large volumes of money transfers to Somalia, stopped in January. Financial institutions in the U.K. and Australia have also ceased the transfers. Banks in Canada continue to process them.

Laws in most countries require banks on each side of a cross-border transaction to check the customer's background and to report suspicious activity. Somalia's two surviving banks are struggling and not up to the task of due diligence. Neither is the central bank equipped to police the industry. (It doesn't set interest rates either.) "When I was governor, there wasn't even a single computer in the whole building," recalls Yussur Abrar, who briefly served as central bank chief in 2013. Many foreign banks prefer not to do business with Somali financial institutions, lest they get caught inadvertently funneling funds to local groups such as al-Qaeda-linked Al-Shabaab, which the U.S. has designated a foreign terrorist organization.

Wire transfer services with large Somali clienteles have been forced to improvise. **Dahabshiil** and **Amal Express** are wiring funds to banks in Dubai to pay for goods that are then shipped to Somalia, where they are sold. The proceeds of the sale end up with the relatives of the Somali expat. Since Merchants Bank's decision to leave the market, some remittance companies have resorted to flying agents bearing suitcases full of cash to Dubai.

It's not clear that Somalia's ostracism from international capital markets has helped cut off Al-Shabaab funds. "The anti-money-laundering regime has been one of the fastest-spreading international legal reforms ever, but there's little evidence to suggest it's actually curbed money laundering," says Jason Sharman, a professor at Australia's Griffith University who studies money laundering.

$1.3
billion

Estimated annual remittance flows to Somalia

Aid groups have begun assessing the collateral damage. A July survey of 2,300 Somali households in six regions by a United Nations agency found that in five of the areas remittances had dropped anywhere from 22 percent to 50 percent. The first reason was less money was being sent. The ▶

◀ difficulty of transferring money into the country was the second-most frequently cited reason.

Relief groups including Oxfam America have pleaded with regulators at the U.S. Department of the Treasury to relax the rules on money transfers to Somalia on humanitarian grounds, as has the office of Representative Keith Ellison (D), whose Minneapolis district is home to about 25,000 Somalis, the largest concentration in the U.S. “The fear is that without remittances, the terrorist group Al-Shabaab will take advantage of the desperation of Somalis,” he says. In March, Treasury Secretary Jack Lew told the House Committee on Financial Services that Somalia needs to bolster regulation of its financial industry if it wants to regain access to global markets. The U.S. Department of State has since invited consultants to apply for a $3 million grant to assess the situation and come up with a set of recommendations. Abrar, the former central bank chief, says it would take a year or two at the very least to implement changes. —*Matt Mossman*

The bottom line Banks in the U.S. have stopped handling remittances to Somalia, where up to 43 percent of households rely on the transfers.

Diplomacy

The Chinese Can Cut Trade Deals, Too

▶ **In TPP’s wake, the pacts may be more political than economic**

▶ **“You will not see China insist too much on anything” in trade talks**

Hedging Bets

Seven of the same nations could be involved in both the Trans-Pacific Partnership and the Regional Comprehensive Economic Partnership

TPP only	RCEP only		Both	
Canada	Cambodia	Laos	Australia	New Zealand
Chile	China	Myanmar	Brunei	Singapore
Mexico	India	Philippines	Japan	Vietnam
Peru	Korea	Thailand	Malaysia	
U.S.	Laos			

Combined GDP of **$7t** or 9 percent of global economic output

GDP FIGURES FROM 2014, EXCEPT NEW ZEALAND (2013); DATA: WORLD BANK

For President Xi Jinping, it was a much-needed victory. On Nov. 9, Australian lawmakers approved a free-trade agreement with China, overcoming local union opposition.

Xi has made such agreements a major part of his strategy to expand China’s influence. Most of the deals have been with small countries in emerging markets, making the Australia pact all the more significant. Xi may soon get another boost, with South Korea likely to approve a trade pact.

Wins with Australia and South Korea could help soften the blow of China’s exclusion from the biggest regional trade deal in history, the U.S.-led Trans-Pacific Partnership (TPP). A dozen nations, including Chinese rivals Japan and Vietnam, announced in October that they had reached a broad agreement to lower tariffs and expand markets in countries whose economies account for 40 percent of global output. The deal could help the U.S. counter Chinese influence in the region, President Obama said when announcing the TPP.

China is also leading talks on the Regional Comprehensive Economic Partnership, an ambitious all-Asia free-trade deal meant to blunt the impact of the TPP. In smaller efforts, China is negotiating with the Gulf Cooperation Council, which includes Saudi Arabia, and the 10-member Association of Southeast Asian Nations (Asean). In a Nov. 1 meeting, Chinese Premier Li Keqiang, Japanese Prime Minister Shinzo Abe, and South Korean President Park Geun Hye agreed to boost efforts to reach a trilateral accord. “Since all these ongoing talks don’t include the United States, [they] would be helpful to enhance China’s foreign trade,” Zhang Jianping, director of the government’s International Economic Cooperation Institute, told the *China Daily* in October.

Unlike the U.S., which has insisted on protections for labor and the environment in the TPP, China typically doesn’t focus on issues other than securing opportunities for its state-owned enterprises and reducing trade barriers such as tariffs. China’s attitude is “we want to do more free trade, no matter how you produce the product,” says Larry Dongxiao Qiu, a professor at the University of Hong Kong’s School of Economics and Finance. “You will not see China insist too much on anything when forming free-trade agreements.”

The Chinese don’t try to fix “behind the border” problems such as rules that regulate bidding on government contracts and local content requirements, says L. Gordon Flake, chief executive officer of the Perth USAsia Centre at the University of Western Australia. While the U.S. takes a “WTO-plus” approach that also looks at standards on labor, the environment, and corruption, he says, China “tends to be WTO-minus” and narrow in scope.

Still, intra-Asian rivalries will make it hard for China to pull all of these deals off. The hostility Chinese officials have toward Abe is likely to make any progress on the Nov. 1 talks with Japan and Korea difficult, while Asean nations threatened by Chinese territorial claims in the South China Sea will probably be wary about Xi’s trade diplomacy. “Not a lot of Asian countries want to be seen as joining the China club,” says Tan Kong Yam, a professor at Nanyang Technological University in Singapore and former chief economist for the Ministry of Trade and Industry.

The outlook for the U.S. TPP club isn’t certain either, with Hillary Clinton joining House Democrats in opposition. If the TPP does take effect, Xi could swallow his pride and ask to join. Chinese membership in the TPP could boost the country’s

PHOTO ILLUSTRATION BY 731; PHOTOS: ALAMY (1); GETTY IMAGES (9)

exports 2.3 percent over four years, the *China Daily* reported last month. For now, investors shouldn't get too caught up in politicians' claims about transformative trade deals, says Leon Berkelmans, director of the international economy program at the Lowy Institute of International Policy in Sydney. In many cases, agreements are more important for their political symbolism. When determining the economic significance of China's trade moves in the region, "a good test is how excited the businesspeople are," says Nanyang Technological University's Tan. "So far, the most excited people are the diplomats." —*Bruce Einhorn*

The bottom line China has been negotiating trade agreements from Korea to Australia, but their economic impact is unclear.

Recession

Russia Reembraces a Sharing Mentality

▶ **Supplementing wages by renting rooms and taking passengers**

▶ **The "Russian mindset of 'my home is my castle' is changing"**

Almost 25 years after the fall of the Soviet Union, a sharing economy is coming back to Russia. Falling wages and double-digit inflation have persuaded many Russians to seek extra income by opening their apartments and cars to strangers. The country is now one of the fastest-growing markets for lodging company **Airbnb**, as well as other startups such as French long-distance rideshare company **BlaBlaCar**.

"Incomes in Russia have plunged over the past year, and people can't afford the level of consumption they got used to," says Vladimir Tikhomirov, chief economist at BCS Financial Group. Lower prices for oil, Russia's main export, have weakened the ruble and sent the economy into the worst recession in at least six years. Gross domestic product is projected to fall 4 percent this year, according to a Bloomberg survey. Real wages fell 9.7 percent in September from a year earlier.

Airbnb's Russian business has more than doubled in the past year. "The traditional Russian mindset of 'my home is my castle' is changing," says Andrew Verbitsky, head of Airbnb's Russia operations. In the Soviet era of communal kitchens and bathrooms, having your own apartment or car was the ultimate status symbol; that was more true after the fall of communism, Tikhomirov says. "Russians came to greatly value their independence," he says.

Airbnb rents per night range from 500 rubles ($7.80) for a room to more than 50,000 rubles for a house or an apartment. The company charges a commission of 6 percent to 12 percent, depending on the rental price. Last year the majority of Russian listings were for whole apartments, says Verbitsky; this year a growing number of listings are for single rooms.

"It suddenly dawned on me that having an extra room was an impermissible luxury after the ruble's collapse"

"It suddenly dawned on me that having an extra room was an impermissible luxury after the ruble's collapse," says Vitaly Shitnev, an advertising executive in Moscow. Shitnev charges about 3,500 rubles a night for his spare bedroom, boosting his income by 20 percent a month, he says.

The extra cash that comes with sharing is enough to persuade some to give other services a try. BlaBlaCar entered the Russian market in 2014, when it purchased a local ride-sharing business called Podorozhniki. The Paris-based company, which has 20 million subscribers worldwide and was valued at $1.6 billion in a fundraising round in September, connects drivers and passengers online. Users log on to BlaBlaCar's website to look for a ride or to find passengers who'll share the cost of a planned trip. BlaBlaCar lets users choose everything from the type of music a driver plays to the level of chattiness (Bla, BlaBla, or BlaBlaBla) of fellow riders.

Irina Posrednikowa who lives in Moscow, says BlaBlaCar arrived at just the right time, when the ruble's decline led people to cut spending. Earlier this year, she found a ride to St. Petersburg, 650 kilometers (404 miles) away, through BlaBlaCar. Posrednikowa, a public relations manager at Moscow's Goethe-Institut, one of the cultural outposts of the German government, paid 1,000 rubles, mostly to cover the cost of gas. Payments are made through the website. "If I had gone by plane, just the taxi to the airport would have cost that much, and the flight itself another 4,000," Posrednikowa says.

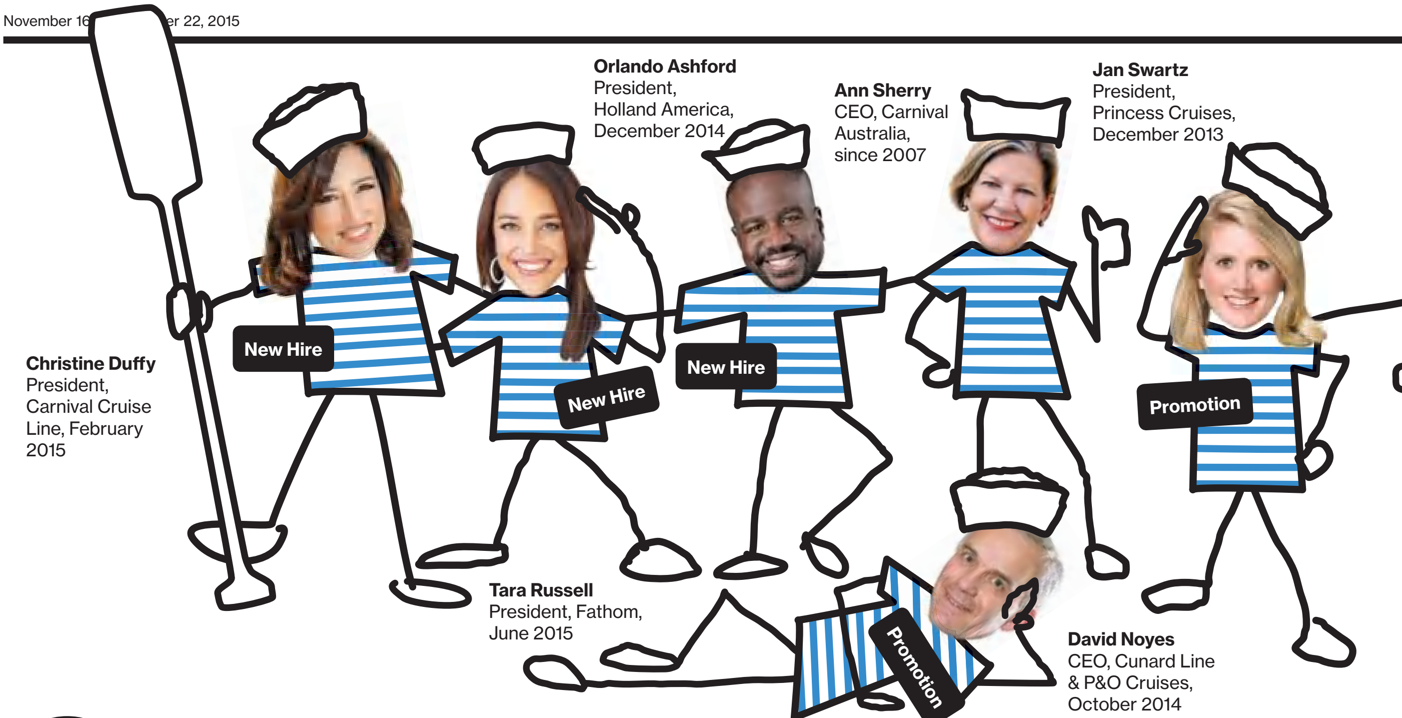
BlaBlaCar doesn't charge a membership fee, but it does take a 12 percent commission in Europe. As an introductory offer, it's not yet taking the commission in Russia while it seeks to attract more customers.

"There was skepticism at first, but we hit 1 million users within 10 months," says Aleksey Lazorenko, BlaBlaCar country manager for Russia and Ukraine. "No other country in Europe has shown such a pace of growth after launch."

Ildar Valeev, a 26-year-old motor-oil salesman who lives in Kazan in western Russia, regularly drives between cities in the Volga region for work. More than the money he saves, Valeev says, what he loves about the service is the chance to meet interesting people. Valeev's favorite trip since he started using BlaBlaCar earlier this year is one he took in July, traveling from Izhevsk in the Western Urals to Ufa, 340 kilometers away. Joining him on the road were a bodybuilder, a stripper, and a museum worker. Says Valeev: "There was a lot to talk about." —*Ilya Khrennikov*

The bottom line Russia has become the fastest-growing market for sharing service companies such as Airbnb and BlaBlaCar.

Edited by Christopher Power, Cristina Lindblad, and Dimitra Kessenides
Bloomberg.com



Carnival Rocks the

▶ **The cruise giant is recruiting managers from diverse backgrounds to reignite its growth**

▶ **"They will out-engineer, out-solution a homogeneous team 90 percent of the time"**

During a meeting with her senior managers in August, Jan Swartz, president of Princess Cruises since late 2013, got an update on the bedding at her 18-ship line. After routine discussions about mattress coils and fabric blends, she raised an unexpected question: "Have we talked a lot about the menopause issue?"

That's something few men would have brought up at a high-level corporate meeting. But the average Princess guest is 53 years old, Swartz says, and she'd gotten an earful from some of them about the night sweats and hot flashes associated with menopause. So she pushed her staff to find duvets that look plush without trapping too much heat and to design the bedding in layers that could easily be taken on and off. "Some people have these symptoms for years," she says. "It's a major health issue, and there's not a lot of discussion."

Such an out-of-the-box approach is just what **Carnival** Chief Executive Officer Arnold Donald had in mind when he appointed Swartz to lead the Princess subsidiary, part of an effort to get new ideas percolating at the world's largest cruise operator. After some high-profile accidents took a toll on Carnival's reputation and its stock price, Donald—a board member with no travel industry experience—was given the helm. His mission, after fixing the biggest operational problems: reach customers outside the industry's typical white, middle-aged or older clientele. In the past two years he's replaced seven of Carnival's nine cruise line heads. Four are now women, one is black, and one gay, a big change in a business that was an offshoot of the European, male-dominated shipping industry. Donald, who is black, says his strategy is to create an environment where differing opinions are heard and taken seriously, or as he puts it, "diversity of thinking."

"I guarantee if you get a diverse group of people aligned around a common objective with a process to work together, they will out-engineer, out-solution a homogeneous team 90 percent of the time and create things none of them alone would have created," he says.

Under Donald, Carnival has launched a socially conscious cruise brand, introduced a marketing campaign that tackles people's misperceptions of sailing head-on, and pushed its 10 cruise lines—which historically ran autonomously—to cooperate on purchasing and safety. So far he's

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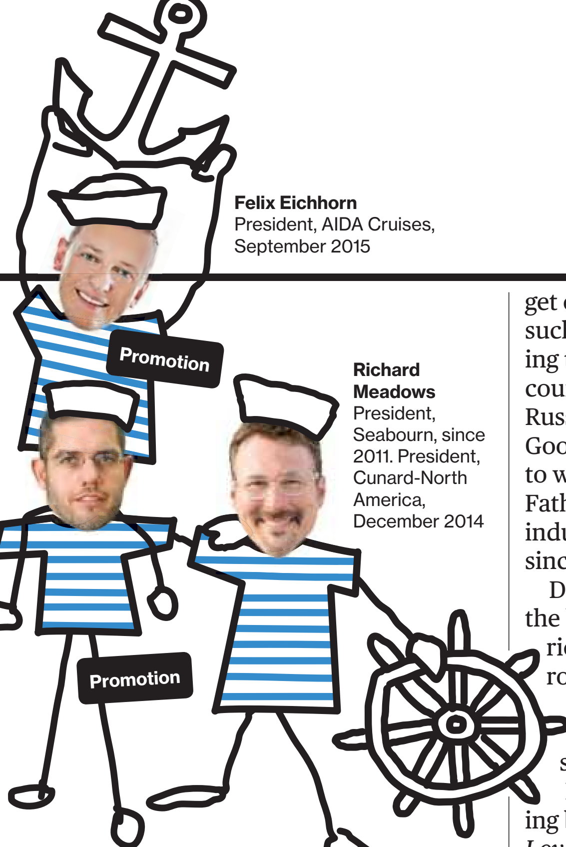


Felix Eichhorn
President, AIDA Cruises, September 2015

Richard Meadows
President, Seabourn, since 2011. President, Cunard-North America, December 2014

Neil Palomba
President, Costa Cruises, February 2015

Boat

succeeding financially. Carnival's net income rose 15 percent, to $1.2 billion, on sales of $15.9 billion in 2014, Donald's first full year on the job. Its share price is up 53 percent since he became CEO in July 2013.

"Mr. Donald has kind of shaken up the place," says Mark Conroy, former president of competitor Regent Seven Seas Cruises and now an industry consultant. "You had people who grew up in the business, and they're always doing the same thing. People from the outside look at things differently."

A mechanical engineer who previously ran Monsanto's Roundup weed killer and Equal sweetener businesses, Donald is comfortable tapping executives from outside the cruise industry. Orlando Ashford, the new president of Carnival's Holland America Line, was running Mercer's compensation consulting business and had never taken a cruise. Donald created Fathom, a smaller line that begins sailing next year, after noticing that a growing number of customers were looking to get off the boat and do volunteer work such as teaching English or improving the infrastructure in developing countries. To run it, Donald chose Tara Russell, who founded Create Common Good, a nonprofit that trains people to work in the food-service industry. Fathom plans to offer the U.S. cruise industry's first dedicated trip to Cuba since Fidel Castro came to power.

Donald knows executives entering the business without hands-on experience can stumble, so he's surrounded new hires with veterans to provide counsel. Stein Kruse, who used to run Holland America, now supervises four of the lines.

Princess's new managers are bringing back old friends: the cast of *The Love Boat*, the 1970s TV series set on a Princess ship. Chief Marketing Officer Gordon Ho, who joined the line two years ago, says there had been a fear the show was too nostalgic and campy to connect with modern cruisers. But Princess had all six original cast members attend the christening of its newest ship, the *Regal Princess*, last year. The event generated global media buzz—and an immediate uptick in bookings, says Ho. The line has since created a cocktail named after Isaac, the show's bartender, and used Ted Lange, the actor who played him, in promotional events and an online video that got 143,000 Facebook views.

Donald has asked his new managers not to act too radically. "He told me, 'Don't feel pressure to change the world in three months,'" recalls Ashford. But the newcomers understand their charge: "My job," Ashford explains, "is to create some different energy here—and attract some different guests."

Among Donald's early moves was a study of some 45,000 people, cruisers and noncruisers, to get their impressions of Carnival's brands. At Holland America, the message was that the line, which features white-jacketed servers, 111-day cruises, and reproductions of Dutch masters oil paintings, was perceived as being for old folks. Beth Bodensteiner, the unit's senior vice president for revenue management, produced data that showed younger, more-active guests spent more while on a cruise. The line is now targeting travelers whom Joe Slattery, senior vice president for global marketing, calls "globe-trotting learners," who spend $14,000 a year on travel and want to study the places they visit.

To reach such customers, Holland America has launched Blend, an educational program where guests hear a 50-minute lecture on wine and then choose from five varieties to blend their own bottle, which they can order for the rest of the cruise. A Billboard Onboard lounge will feature music trivia and performers. Many of these ideas had been kicking around for years, says Ashford, but employees just "kept them under their desks." Now they'll be featured on the line's new *MS Koningsdam*, which will start sailing in April.

Bill Smith, the cruise vice president at luxury travel agency Virtuoso, liked what he heard when Ashford made a presentation of the planned changes to 100 of his agents in October. "He's an exciting change for a pretty boring Holland America," Smith says. Donald hopes to hear that about all his new managers. *—Christopher Palmeri*

The bottom line Carnival CEO Donald has assembled a team of managers from diverse backgrounds. Results have improved in their wake.

Workplace

Lunch Is a Tasty Perk at Shenzhen's Factories

- **Year-old Nourish wants workers to eat better, healthier meals**
- **"I'd leave to work for another factory if they have better food"**

For evidence of the changes afoot at China's factories, take a trip to Shenzhen and head to a cafeteria for lunch. On a mid-October day, Yao Weizhong, an assembly-line worker at the **Stanley Black & Decker** plant, is deciding between Hunan-style gingered pork spare ribs and Cantonese-style crispy duck. The options, he says, have improved greatly since catering ▶

◀ startup **Nourish** took over the service last year. Aromas waft through the canteen from the other menu items—fried chicken and two kinds of noodles—as Yao digs into his meal.

Nourish, founded early last year, is one of several companies delivering a service that China's workers are demanding. In the last few years, factory owners have focused on improving conditions—from raising salaries to boosting safety—to attract and retain employees. "If the salary's the same, I'd leave to work for another factory if they have better food," Yao says.

Food is as important to China's workers as wages, according to Ian Spaulding, chief executive officer of Hong Kong management consulting firm Elevate Global. "Big factories might be willing to invest a little more to distinguish themselves in a crowded marketplace," he says.

Until recently, the bar for food service was low, says Nourish founder Richard Craggs. "One factory, I won't name names, used to serve three-day-old vegetables and gutter oil," he says. "It's unhygienic and dangerous."

That presents Nourish with a potentially lucrative opportunity to improve food service. The roughly 60,000 factories in South China's Guangdong province employ 40 million workers—a $29 billion food-service market. Highly publicized food scares in China over additives in milk, fake meat, and other unsavory scandals have made food safety a priority.

In its first year, Nourish signed several big clients including Black & Decker, **Emerson Electric**, and **Foxconn Technology**. The startup will generate $11 million in revenue this year and make a profit, says Craggs, a Brit who grew up in Hong Kong and spent two decades scouting Chinese factories for European gifts companies. In 2013 he wanted to switch gears and bought two restaurants in Shenzhen. He renovated the kitchens and hired cooks and workers to help him set up catering services for local schools and businesses, while continuing to run the eateries. A break came when the manager of a foreign-owned electronics factory, a regular at one of Craggs's restaurants, asked him to take over the canteen.

Craggs has put $800,000 of his own money into the venture and also drawn $3 million in funding from Gabriel Fong, founder of incubator Jaarvis Labs; Matthew Palevsky, son of early Intel backer Max Palevsky; and Katherine Tsang, a former chairwoman of Greater China for Standard Chartered Bank. Nourish's competitors include the U.K. company **Compass Group** and the French food-services giant **Sodexo**.

Most factory canteens are run and staffed by a mix of contractors and subcontractors. Craggs says layers of middlemen open the door to corruption—purchasing managers skim off budgets, leaving little money for food purchases. Factories typically budget from 5 yuan to 12 yuan (79¢ to $1.89) per worker per meal.

Craggs is trying to get bulk purchasing deals from wholesalers to reduce his costs and is experimenting with ordering dairy and vegetables direct from farms in China rather than through middlemen. Nourish managers are required to track daily prices of 92 vegetables and 48 cuts of meats to ensure that purchasing managers aren't padding accounts.

Craggs is looking to introduce technology in the canteens. He's developing an ordering app, to be released in the spring, so workers can preorder meals on their smartphones. That will help Nourish cut down on food waste. The app will also be used for a new service Craggs hopes to introduce in the spring, delivering lunches and dinners to the growing ranks of China's white-collar workers. "We're leveraging the scale of food for the factories to deliver freshly made lunchboxes or groceries," Craggs says. *—Shai Oster*

The bottom line Nourish, a food service for several big factories in Shenzhen, expects to generate $11 million in revenue this year.

Management

More Women Punch The B-School Ticket

▶ **Females comprise 40 percent of MBA students at top schools**

▶ **It should contribute to "building the senior leadership pipeline"**

The handful of women who first earned MBAs at Tuck School of Business at Dartmouth College in the 1970s were confined to all-female study groups because male classmates chose to be on teams with other men. But Lane McVey, one of the 120 women who make up 42 percent of the school's incoming MBA class this year, says her six-person group has an equal number of women and men. According to McVey, who worked three years in advertising sales for ▶ 26

PHOTOGRAPHS BY THEODORE KAYE FOR BLOOMBERG BUSINESSWEEK

Charlie Rose talks to...

Andrea Illy

The CEO of Illycaffé discusses the spread of Italian coffee culture, the influence of Starbucks, and the vital importance of roasting

Is it true that your coffee beans come from 20 different countries?
Yes, 20 countries. And Illy has just one blend. This was the dream of my grandfather, offering the greatest coffee. And the best can be only one, so just one blend. We're the only brand in the world offering only one blend. It's a blend of nine Arabica beans, exclusively produced for Illy by growers we train.

You run Illy, but you're also the ambassador for the company, aren't you?
Yes, I've dedicated my life to this business, starting from my studies. I'm a chemist by background. I decided to study chemistry in order to be able to produce better coffee, as my father did before me. I published my book on it [*Espresso Coffee: The Science of Quality*]. My family name is the brand name, so I'm the natural testimonial for the brand.

Take us from the bean to the cup.
So Brazil, Ethiopia, Costa Rica, Guatemala. India as well, and Tanzania and so many other countries. We store them, because we have to buy all these beans immediately after the crop. So we store, then we blend, then we roast. All of the 1,000 aromas of coffee are generated during roasting. The flavors that are present in the green coffee have nothing to do with the final flavor of roasted coffee. This is a critical phase in which you really have to be perfect.

NICOLÚ CAMPO/DEMOTIX/CORBIS

"There are many other ways to get caffeine. So if you choose coffee, it's because of the pleasure"

How important is the U.S. to your company, and how much has Illy grown during your time?
America is the No. 1 coffee market in the world. And not only that, it's also dynamically growing. There's an increase here in the value per cup consumed, so it's really an interesting country to me. We were in 29 countries, and now we're in 144. We really have become global. But we're a family—and a team—so we operate together. This is something that I executed along with my team.

You've talked about the virtues of coffee and coffee culture. Explain.
There are many other ways to get caffeine. So if you choose coffee, it's because of the pleasure. In the last 20 years, particularly in the U.S., a positive revolution made coffee much more esthetic and experiential. This has been, by the way, inspired by Italy: The Italian espresso, the barista, the culture of Italian coffee made it not only more popular but also of much better quality.

And how would you characterize the impact of Starbucks?
They changed the culture. They brought quality coffee to Americans. As a matter of fact, before their arrival, their development, it was nearly impossible to get a decent cup of coffee. So they kind of filled the gap because there were no places to go to drink coffee.

Watch Charlie Rose on Bloomberg TV Weeknights at 6 p.m. and 9 p.m. ET

◀ Major League Baseball before attending Tuck: "It's very coed, and everything feels equal, which is something I wanted when applying."

More than half a century after top universities began admitting women to their MBA programs, business schools are finally catching up to law and medical schools in gender parity. Women comprise 40 percent or more of first-year MBA students at 12 top schools including Harvard, Wharton, Yale, Tuck, Northwestern's Kellogg, MIT's Sloan, and University of Rochester's Simon, according to a study by the Forté Foundation, which promotes business education for women. "This should go a long way in building the senior leadership pipeline at companies and on boards," says Elissa Sangster, Forté's executive director.

43%

Women's share of Wharton's MBA enrollment in fall 2015, up from 31 percent in 2005

Women's enrollment in full-time MBA programs climbed to about 36 percent of students from 32 percent four years ago, Forté found. In 2011 only a handful of full-time programs had classes that were one-third women, but "now there's a race to see who'll get to 50 percent" first, especially as millennial women recognize the opportunities they get with an MBA, Sangster says. More than 40 percent of chief executive officers of both genders at the nation's 100 largest companies have MBAs, according to Forté. They include **General Motors**' Mary Barra, **PepsiCo**'s Indra Nooyi, and **Hewlett Packard Enterprise**'s Meg Whitman.

While women fill about half of middle-management positions, they hold just 25 percent of senior jobs and 19 percent of directorships at Standard & Poor's 500 companies, according to Catalyst, a research and advocacy group for women. Only 22 women, or 4.4 percent, are CEOs at the nation's largest companies.

Not that an MBA guarantees equal pay. Women and men with the degree start out earning almost the same: \$98,000 for women and \$105,000 for men, according to a Bloomberg survey of those who graduated from 2007 through 2009. But the gap widens sharply. By 2014 the men hauled in a median of \$175,000 and the women \$140,000. Much of the disparity is the result of heftier yearend bonuses that men get, a Bloomberg analysis found.

The increase in female MBA students and their vocal discussion of issues such as work flexibility is also affecting how men think about their own careers. At Harvard Business School, more than 200 of the 548 men in the class of 2017 are members of the Manbassador group, formed two years ago by male students who wanted to support the school's Women's Student Association. Manbassadors form Lean In groups for men to discuss their own work and life experiences and goals.

At a lunch earlier this month with some of her students, Robin Ely, a Harvard Business School professor and senior associate dean for culture and community, was struck that the conversation "was all about gender" and workplace flexibility, she says. "All the men said they'd love at a certain point in their careers to work an 80 percent schedule but didn't think that as men they could ask for that," she says. When she started teaching at Harvard in 2000, "that conversation never happened." —*Carol Hymowitz*

The bottom line Although women hold about half of middle-management jobs, there are only 22 female CEOs at America's largest companies.

Food

Hey Mom, Set Another Place at Dinner for Fido

▶ **More owners are buying food for their dogs that mimics their own**

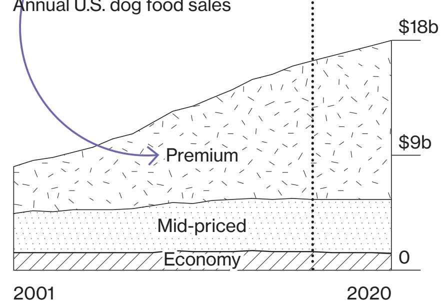
▶ **It's "the next level of how people are going to feed their pets"**

Richard Thompson cuts into a tube of his company's Chunky Chicken & Turkey Recipe, just off the manufacturing line. The chief executive officer of a fast-growing gourmet food manufacturer is obsessed about the quality of his products, so he uses only fresh ingredients, eschews preservatives, and limits the time meals sit on shelves to make sure they're eaten while still

Includes Freshpet and "eat-like-your-owner" brands

Fit for a King Charles

Annual U.S. dog food sales



TREATS EXCLUDED; 2015 FIGURES ARE PROVISIONAL; DATA: EUROMONITOR

exploding with flavor. His manufacturing chief, Michael Hieger, picks up a slice and pops it into his mouth to prove just how delectable it can be. Says Hieger, between chews: "Tastes just like Thanksgiving."

Now if only dogs—the target consumers of Thompson's **Freshpet** meals—celebrated the autumnal feast. The impromptu tasting occurs on a tour of Freshpet's factory in Bethlehem, Pa., which cranks out the only industrial-volume refrigerated pet food on the market. The company is among a group of fast-growing innovators in the \$23.7 billion pet food industry that are winning the hearts—and opening the wallets—of dog and cat owners with healthy chow billed to be almost as good as what humans put on their dining tables. "This is the next level of how people are going to feed their pets," says CEO Thompson.

Gourmet dog food is nothing new. Companies have been blending lamb and salmon into their kibble and offering organic grain-free food for years. But traditional pet food makers are stepping up their marketing game in the face of competition from upstarts like Freshpet and **Blue Buffalo** as the fresh food movement comes to include pet victuals.

Colgate-Palmolive's Hill's Pet Nutrition unit offers dog food to help your pooch lose weight. **Nestlé**'s Purina has a website where owners can customize special blends because "the best nutrition is personalized," according to the site. **Mars**, the global leader in pet food sales, is tapping into the farm-to-table trend with its Nutro Farm's Harvest line, made with blueberries and cranberries that are "harvested at just the right time and freeze dried to lock in the nutrients." Its Cesar Home Delights line

FROM TOP LEFT: COURTESY FRESHPET; COURTESY BMW; MICHAEL GERMANA/EVERETT COLLECTION/ALAMY; DATA: FORTÉ FOUNDATION

sells lasagna and beef stroganoff for dogs with the tag line "he'll have what you're having." Milo's Kitchen, part of **J.M. Smucker**'s $5.8 billion acquisition last year of Big Heart Pet Brands, sells duck jerky made without artificial flavors and colors.

The eat-like-your-owner strategy appears to be working. Sales of premium dog food have surged 45 percent, to $10.5 billion, in the U.S. since 2009 to account for more than half the market. Blue Buffalo, one of the first to sell kibble and canned food that mixes whole grains, fruits, and vegetables with Rover's lamb and chicken, went public this summer, and its sales are expected to top $1 billion this year.

Freshpet is breaking into new territory with refrigerated meals. Its high-end Vital line taps into an increasingly popular trend in the industry—the Paleo diet for pets. The idea? Feed your dog what his wolf ancestors ate in the wild. Freshpet's Vital Raw meals are made with chicken and beef and include kale, spinach, and sweet potatoes. They're grain-free, the better to "mimic the ancestral eating habits of dogs," according to the company. All of Freshpet's products are sold in their own branded refrigerated display cases inside almost 15,000 stores, including some Walmarts, Targets, and Whole Foods Markets.

Feeding Freshpet to your dog can set you back more than double the cost of lower-priced canned food. Yet sales of the premium chow have climbed 37 percent, to more than $103 million, in the last year, according to researcher IRI. That's just over 1 percent of the premium pet food market, and the company is expected to post its fifth straight annual loss in 2015. (It hopes to turn a profit next year.) Still, Freshpet's Thompson says, there's a compelling reason the brand will succeed: "If your family is into health and wellness, and you treat your pet like family: bingo."
—*Craig Giammona*

The bottom line Premium dog food sales have surged 45 percent, to about $10.5 billion annually, since 2009.

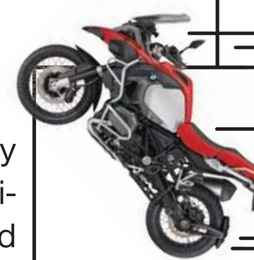
Edited by James E. Ellis and Dimitra Kessenides
Bloomberg.com

Briefs

By Kyle Stock

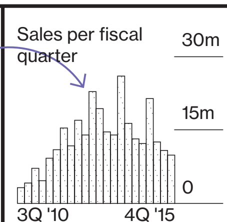
AG Blitz

It was another losing week for fantasy football. New York Attorney General Eric Schneiderman declared that sites like *DraftKings* and *FanDuel* constitute illegal gambling and ordered them to cease operations in the state. Both companies issued statements disputing Schneiderman's characterizations, saying their services are contests of skill, not random gambling. *SeaWorld* will end killer-whale shows at its San Diego location after grappling with protests from animal-rights groups and declining attendance. The park will replace the spectacle with a "conservation themed" show. The leaping whale stunts will continue at SeaWorld sites in Florida and Texas. The U.S. Department of Justice sued to scuttle a deal in which *United Continental* would buy 24 takeoff-and-landing slots from *Delta Air Lines* at congested Newark Liberty International Airport. United already controls 73 percent of the runway capacity at the New Jersey airport; any more capacity would drive up fares, say federal antitrust regulators. *Alibaba*'s e-commerce empire rang up $14.3 billion in orders during the Chinese shopping event known as Singles Day. It broke last year's $9 billion tally in just 12 hours. The *Hunger Games* finale, *Mockingjay Part 2* can't come soon enough for *Lions Gate Entertainment*. The studio took a $7.2 million writedown on *The Last Witch Hunter*, a Vin Diesel-led film that flopped this fall. Investors were cheered, however, that the company sold a 6.8 percent stake to cable's *Discovery Communications* and *Liberty Global*.



BMW said it would sell 200,000 motorcycles a year by 2020, boosting its bike business by roughly 65 percent. It expects to find new riders in Asia and South America.

Bigger may be better for **Apple**. The company launched a supersize iPad Pro in an attempt to turn around a recent decline in **unit sales** of the tablets. The 12.9-inch gadget starts at $799.



CEO Wisdom

"Often when you are authentic and different and you don't fit into a box, people look to attack you. And I'm imperfect, but not in integrity and not in intent; only in performance."
—Lynn Tilton, CEO, Patriarch Partners, facing actions from regulators and investors over fund valuations

Isle of Disenchantment

In San Juan on Nov. 5, protesting cuts in federal spending for the island's Medicaid and Medicare programs

▶ As Puerto Rico careens toward fiscal disaster, Congress looks the other way

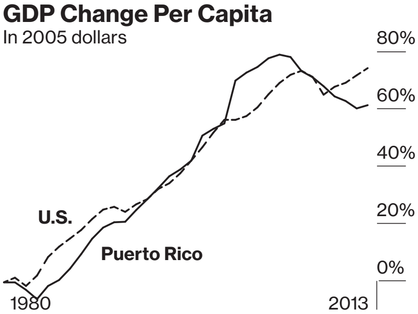
▶ "We're not moving very fast on that. I'm not sure what we should do there"

Puerto Rico doesn't look as if it's on the verge of economic disaster. Tourists are still flocking to its beach resorts. Malls, anchored by department stores like Macy's and JCPenney, are full of shoppers. At rush hour, roads are clogged with late-model luxury SUVs. But after years of borrowing to prop up the island's stagnant economy, the government faces $720 million in debt payments in the next two months, and it may run out of cash as early as December.

Government officials say meeting those obligations may leave them short of the cash they need to cover payroll, retirement benefits, and Christmas bonuses. Governor Alejandro García Padilla has said he'll consider cutting hours for public workers to keep essential functions running. García Padilla has already closed some schools, delayed tax rebates, and suspended payments to government suppliers.

The Obama administration has offered a way out. On Oct. 21 the Treasury Department put forward an assistance package that would sustain the island's medical system by increasing reimbursement rates for Medicaid, the public-health program for the poor. It serves 46 percent of Puerto Ricans and is paid at rates 70 percent lower than in any U.S. state, according to the Puerto Rico Healthcare Crisis Coalition, a group of doctors, hospitals, and insurers. It would also offer some bankruptcy protections to help the government restructure more than $70 billion in debt—more than any state's except New York and California.

GDP Change Per Capita
In 2005 dollars



135 schools have closed or been consolidated

PHOTOGRAPHS BY CHRISTOPHER GREGORY FOR BLOOMBERG BUSINESSWEEK. DATA: COMPILED BY BLOOMBERG

Feliciano with her daughters

ent

In return, Congress would gain more say over the island's finances. "The situation in Puerto Rico is urgent," says Brandi Hoffine, a White House spokeswoman.

So far, Congress, which would have to approve the changes, hasn't responded. A bill that New York Democratic Senator Chuck Schumer introduced in August to equalize Medicaid and Medicare rates has stalled. So has a bill by Connecticut Democratic Senator Richard Blumenthal that would allow Puerto Rico's municipalities to file for bankruptcy protection. A bill introduced on Oct. 8 in the House by Puerto Rico's nonvoting member, Democratic Representative Pedro Pierluisi, would guarantee some of the island's debt, but it hasn't attracted any co-sponsors. "We are fast approaching a catastrophe," says Melba Acosta, president of the Government Development Bank, which oversees the island's finances and debt. "We cannot wait any longer."

Republicans say they won't approve assistance to Puerto Rico unless its government provides audited financial statements giving a complete picture of its finances. Puerto Rico, a self-governing U.S. territory, missed a self-imposed Oct. 31 deadline for submitting statements from fiscal year 2014 and hasn't yet prepared documents for the 2015 fiscal year, which ended June 30. Congress "is waiting for some good-faith effort from Puerto Ricans," says Iowa Republican Chuck Grassley, chairman of the Senate Judiciary Committee.

Alaska Republican Senator Lisa Murkowski, whose Energy and Natural Resources Committee oversees U.S. territories, says she's still reviewing the administration's proposals. "The one thing we all agreed on is that Puerto Rico is in a world of hurt right now," she says. Utah Republican Orrin Hatch, who as chairman of the Senate Finance Committee held a hearing on the island's travails in September, says he's receptive to the administration's proposal to establish a control board to oversee the island's finances. "We're not moving very fast on that," he says. "I'm not sure what we should do there."

Democrats say hedge funds, which hold as much as a third of Puerto Rico's debt, have discouraged action that would make it harder for them to get paid. "It has become increasingly clear that hedge funds, which have purchased a sizable part of Puerto Rico's debt, are exacerbating the crisis," says Representative Nydia Velázquez, a New York Democrat who introduced a bill on Nov. 4 that would increase disclosure requirements for hedge funds' debt holdings.

Investors and hedge funds holding bonds from the Puerto Rico Electric Power Authority, or Prepa, agreed on Nov. 5 to a restructuring plan that would require them to take losses of up to 15 percent. "Blanket statements criticizing the role of bondholders aren't just factually inaccurate, they are a clear example of damaging political rhetoric," says Stephen Spencer, a managing director at Houlihan Lokey who is advising Prepa bondholders.

Puerto Rico's economy has shrunk about 15 percent since 2006, when Congress ended tax breaks for manufacturers there. The unemployment rate stands at 11.4 percent, more than twice the national average. Forty-five percent of families live below the poverty line. Last year the island lost an average of 1,200 people each week to the mainland, the most since the U.S. Census Bureau began tracking departures a decade ago. "We're on the verge of becoming a ghetto of old poor people," says Elías Gutiérrez, an economics professor at the University of Puerto Rico.

Marielys Feliciano, a single mother of four who works in construction, sees no reason to stay. This summer, her neighborhood school outside the well-off city of Manatí was closed to cut costs. Now she has to wake up at 4 a.m. to get her children to another school and pays for a baby sitter to pick them up. When she called to ask about government assistance, she was told she'd be better off moving to the U.S. "I see the future here, and the doors are closing," she says, folding her hands together. "I can't limit my kids to a place where there's no future." *—Ezra Fieser, Michelle Kaske, Kasia Klimasinska, and James Rowley, with Angela Greiling Keane*

The bottom line Puerto Rico's government says it could run out of cash to pay its debts in December, and Congress has yet to offer assistance.

Unions

Labor for Bernie Means Headaches for Hillary

▶ **Sanders supporters want to slow the Democratic endorsement train**

▶ **"The rank-and-file members that I know are all voting for Bernie"**

The 35-person executive board of the American Federation of State, County & Municipal Employees voted on Oct. 23 to endorse Hillary Clinton for president, the 10th national union to do so. "AFSCME members want the

candidate who will be the most effective champion for working families and who will be able to deliver a victory in this critically important election," Lee Saunders, the union's president, said in a statement. The vote, he added, was based on polls of AFSCME's 1.6 million members. "The majority of the people I talk to definitely are for Hillary," says Julie Schultz, an Iowa parole officer who serves as president of her local.

Yet the vote did nothing to squelch enthusiasm among AFSCME members for Clinton's chief rival for the Democratic nomination, Senator Bernie Sanders of Vermont. An hour or so before the AFSCME press release went out, a group calling itself Labor for Bernie e-mailed reporters a petition from AFSCME members asking the union to delay an endorsement. "An undemocratic decision at this time will only confirm what so many members already believe: that AFSCME is not an organization run by and for its members," it said. Similar sentiments flooded AFSCME's Facebook page.

Labor for Bernie is loosely organized, earnest, and fueled by the sense that there should be a contest for the Democratic nomination. It was created after Sanders announced his candidacy last spring by longtime organizers including Rand Wilson, who directs policy and communications for Service Employees International Union (SEIU) Local 888 in Massachusetts. Labor for Bernie offers online tools to link Sanders supporters by union or region as well as templates for talking about his candidacy. "This doesn't take a lot of work," Wilson says. "People are hot to trot."

So far the group has secured endorsements from two dozen union locals and federations, and it says it drew 17,000 union members to a September conference call with Sanders. "The rank-and-file members that I know are all voting for Bernie," says Illinois mechanic Al Wagner, a member of the International Association of Machinists & Aerospace Workers, which has endorsed Clinton.

Skepticism of Clinton is fueled in part by frustration with her positions on issues important to many union members, including the $15 federal minimum wage. (Clinton said on Nov. 3 she would back a $12 federal minimum.) "The best we can get from all of our political efforts is our name on a piece of paper, an acknowledgment, a ticket to the inauguration," says Larry Hanley, president of the Amalgamated Transit Union, who joined a Labor for Bernie call. Neither he nor his union has made any endorsement.

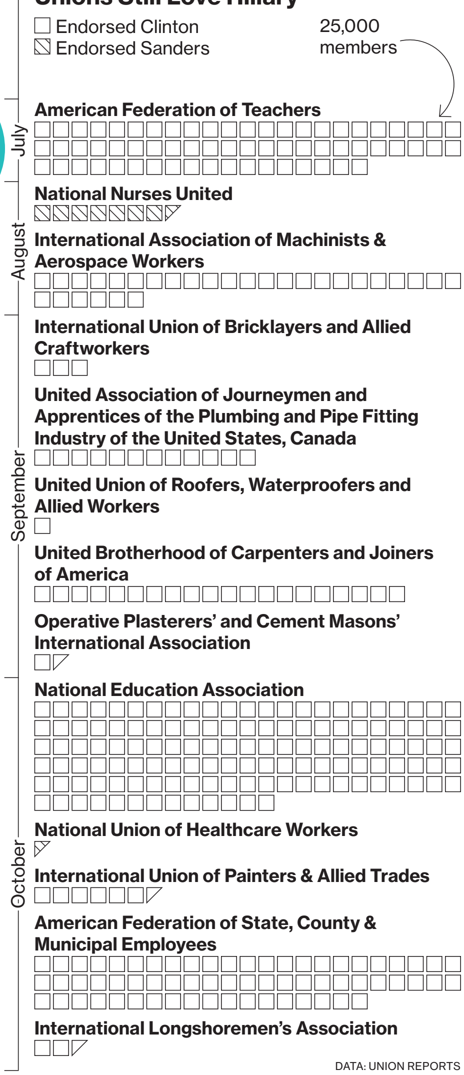
In July, Larry Cohen, former president of the Communications Workers of America (CWA), joined the Sanders campaign as a volunteer liaison to organized labor. "Technology gives us more opportunities to link up with other people than when we were left solely to walk neighborhoods and workplaces," he says. Union members are now "getting used to linking up in those ways and taking action."

In August, Sanders scored his first national union endorsement, from National Nurses United. The National Union of Healthcare Workers followed in October. Other unions have held off on endorsements after Sanders supporters pressured them. Members of the Massachusetts-based International Brotherhood of Electrical Workers Local 2222, whose picket lines Sanders has supported, got their local union to endorse him and successfully lobbied the national union's newly elected president, Lonnie Stephenson, not to endorse Clinton right away. He's said IBEW plans not to endorse anyone until the new year at the earliest, if at all. Chris Shelton, CWA's president, says he's holding a binding poll, open to all members and closing in mid-December.

The biggest union that still hasn't made an endorsement is the 1.9 million-member SEIU, which is holding an executive meeting on Nov. 17. "Our process has always been to consider an endorsement when local leaders indicate that they have completed discussions with member leaders and local executive boards," says SEIU spokeswoman Sahar Wali. —*Josh Eidelson*

The bottom line Union members who support Bernie Sanders are trying to delay endorsements of Hillary Clinton.

Unions Still Love Hillary



DATA: UNION REPORTS

Government Services

Taking the Public Out of California Libraries

▶ A private operator offers savings, but residents aren't sold

▶ "They don't have to listen to the community"

The three biggest library systems in the U.S. are in New York, Chicago, and Los Angeles. The fourth belongs to **Library Systems & Services**, a company in Rockville, Md., that operates 82 libraries in six states. Backed by Argosy Capital Group, the company, known as LSSI, has more than doubled its number of libraries in the past decade as local governments have increasingly outsourced public services, from charter schools to parking meters, to contractors. But LSSI is running into opposition in Kern County, Calif., where it's looking to add 24 libraries in what would be its biggest deal so far.

"We don't have to go in and just outright win a state. We have to go in and perform well in certain parts to make sure we get our target number of delegates out of each state." —*Bush campaign political director David James*

Campaign 2016 Winning While Losing

As he languishes in national polls, Republican Jeb Bush is focusing on collecting as many delegates as possible when the primaries begin in February, rather than on winning whole states—a strategy that helped Barack Obama snag the 2008 Democratic nomination. —*Michael C. Bender, with Sasha Issenberg*

Bush's game plan

Republican candidates need **1,237** delegates to claim the party's nomination.

Do the math
More than
80%
of delegates elected in March will be awarded on a proportional basis; the rest will be winner take all.

Focused effort
The Bush campaign is choosing where to compete based on areas where Bush has an advantage, including heavily Hispanic neighborhoods.

February 2016
133
delegates at stake

Iowa
Nevada
New Hampshire
South Carolina

Right to Rise, the pro-Bush super PAC, has already aired 8,000 TV ad spots in the February primary states

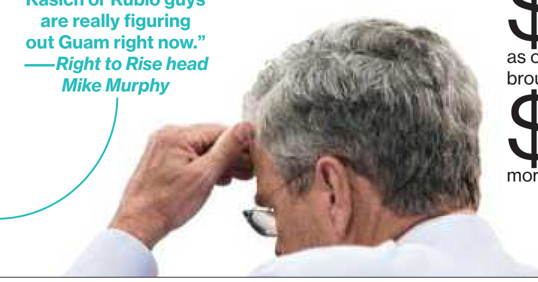
Delegates awarded on winner-take-all basis

155
delegates

March 2016
1,463
delegates at stake

Alabama
Alaska
American Samoa
Arizona
Arkansas
Florida
Georgia
Guam
Hawaii
Idaho
Illinois
Kansas
Kentucky
Louisiana
Maine
Massachusetts
Michigan
Minnesota
Mississippi
Missouri
North Carolina
Northern Marianas
Ohio
Oklahoma
Puerto Rico
Tennessee
Texas
Utah
Vermont
Virgin Islands
Virginia
Washington, D.C.
Wyoming

"I don't think the Kasich or Rubio guys are really figuring out Guam right now." —*Right to Rise head Mike Murphy*



April to June 2016
876
delegates at stake

Bush's fundraising

The super PAC raised
$103m
as of June 30 and says it's brought in at least
$10m
more since then

In January the county declared a fiscal emergency as officials predicted that collapsing prices for crude oil would reduce tax collections 15 percent in Kern, which accounts for 72 percent of California's oil production. County departments were ordered to reduce their budgets. Under a proposal from LSSI, Kern would dismiss its unionized librarians, who would then be hired by LSSI under nonunion contracts at or near their current salaries with 401(k) plans, allowing the county to shed pension obligations. "We do utilize professional librarians to do professional library services, and in fact, we'd increase that," says Bob Windrow, LSSI's vice president for business development.

LSSI would expand weekly hours 20 percent, including Sundays at some branches, and increase spending on books to $1 million a year from $258,000—for about the same amount of money the county now spends, $8 million. The county would retain the right to determine which books libraries carry, says LSSI Chief Operating Officer Paul Colangelo. "What's behind this is just a desire to improve library services," County Administrative Officer John Nilon said during an Oct. 26 public forum at a library in Arvin, a farm town southeast of Bakersfield. A third of Arvin's 20,000 residents live below the poverty line, compared with the countywide average of 23 percent.

Arvin's library is closed on Fridays, Saturdays, and Sundays. Many of the 40 residents who attended the forum pleaded with Nilon and other officials in English and Spanish to expand hours, buy books, and upgrade technology. When Nilon asked how many of them opposed the LSSI deal, 28 raised their hands. "If our libraries are privatized, the companies have a right to do whatever they want, and they don't have to listen to the community," said Yesenia Contreras, 26, an Arvin resident and community organizer. "We live in a rural community. Our kids do not have access to books and computers."

LSSI has had some unsatisfied customers in New Jersey, North Dakota, and Texas, where cities have severed operating agreements with the company. In San Juan, Texas, just north of the Rio Grande, city commissioners said the company wanted to charge an excessive amount to add Sunday hours, teen programming, and more books, without disclosing its profit margin.

Yet some users seem satisfied. At an LSSI library in Santa Clarita, a Los Angeles suburb, patrons said they had no idea the facility wasn't publicly run. There were no LSSI logos on signs or brochures. "Libraries shouldn't be in the business of making profits," says 64-year-old Timothy Doe, a part-time painter working on an art project in a community room. "However, what they've got going on here with this company, they must be doing something right. This library is open seven days a week. They have everything here, and it shows." —*James Nash*

The bottom line Under financial pressure, cities and counties are considering outsourcing library services.

Edited by Allison Hoffman
Bloomberg.com

DANIEL ACKER/BLOOMBERG; DELEGATES DATA: REPUBLICAN NATIONAL COMMITTEE


JUST ASK
Add gelato to my shopping list.
How is traffic?
What's on my calendar today?
Set a timer for 3 minutes.
Play my "New Artists" Playlist.
What's the news today?
What's the weather like this weekend?
Turn off the lights.
Amazon Echo is designed around your voice. It's hands-free and always on to answer questions, play music, read the news and check sports scores, traffic, the weather and much more. Just ask.
INTRODUCING
amazon echo
amazon

November 16 — November 22, 2015

Putting the App In Apartment


Handy iLocks


Nest thermostat


LED lightbulbs


Sony PS4


Samsung appliances

▶ The freelance culture has spawned "co-living," a tech-savvy solution to nomadic lifestyles

▶ "Obviously we're not a hotel, but it feels a little more like that"

In the Crown Heights neighborhood of Brooklyn, N.Y., an unassuming town house built in 1931 has received some very modern updates. The doors of the building's four 1,400-square-foot apartments can be unlocked by residents' Apple Watches and iPhones. The retro-looking lightbulbs hanging over the kitchen counter are energy-efficient LEDs. The "smart mattresses" are provided by startup Casper, the luxury sheets come from Parachute, and the private social network is being custom-built. To qualify for one of the 19 bedrooms in the semicommunal setup, you need to pass a background check; once you're accepted, you must sign a month-to-month rental contract—but that's all done online, without a single Realtor.

This is the first building run by **Common**, a startup using tech amenities and rent-as-you-go flexibility to lure peripatetic urbanites with movable jobs and freelancer incomes. The price tag per bedroom—the size ranges from 100 sq. ft. to 150 sq. ft.—is $1,800 to $1,950 a month. That includes utilities and house basics like cooking oil, salt, paper towels, and Swiffers. Most of the rooms are pretty similar, with rough-hewn wood furniture and minimalist lamps, an aesthetic that Common founder Brad Hargreaves calls Hudson Valley Americana.

With online contracts, tenants can use Common's app each month to move into other available rooms in the building and—eventually, as the company expands—to apartments in San Francisco, Los Angeles, or elsewhere in New York's $50 billion rental market. "Just wheel in a suitcase," says Bridgette Farrer Muir, Common's director of admissions. The first Crown ▶

PHOTOGRAPHS BY NATHAN PERKEL FOR BLOOMBERG BUSINESSWEEK (7)

◀ Heights residents began moving in at the end of October; the company says its next building, in the same neighborhood, will open by the end of the year.

Common is part of a trend called co-living, a Silicon Valley spin on the hippie collectives from California's past. It's selling a lifestyle enabled by the Internet: communes for digital nomads. "You can stay in one place and move anytime to another place. It's like having an apartment everywhere," says Kirill Sopot, co-founder of San Francisco's **Coliving Club**, a chain of four houses.

Beyond New York and California, office-space company **WeWork** is getting into the co-living business through its WeLive division. The first WeLive building—a 12-story collection of 360-square-foot micro-apartments—is slated to open by yearend in the Crystal City neighborhood of Arlington, Va. In internal documents published by *BuzzFeed*, WeWork projected that its co-living arm would account for as much as 22 percent of total revenue by 2018. (The company declined to comment for this story.) Other early co-living developers include **Nest Copenhagen**, which runs a building with several dozen rooms; **Caravanserai**, which is scouting buildings in Mexico City, Lisbon, and Bali; and **Sende**, which bought a handful of homes in a tiny village in northern Spain.

For developers such as Common, replacing each step of the residential real estate process—Realtor, property manager, roommate scout—is a big part of the sales pitch. "We are really a full-stack company," says Hargreaves, 29, appropriating the term for a programmer familiar with each layer of a coding job. "Obviously we're not a hotel, but it feels a little more like that from a service perspective."

Hargreaves started Common in April after noticing that the students at his first startup, the coder-training company General Assembly, couldn't find temporary places to stay while taking classes. "They would end up living in a basement room in the East Village," he says. In July he teamed up with real estate company **Quantierra** to buy and begin remodeling the Crown Heights building; Quantierra will receive 25 percent of the rental profits. That month, Common announced a $7.4 million round of funding that valued the company at $20 million.

Common received more than 300 applications for the 19 bedrooms in its first building

Residents "are not searching for privacy. They are searching for realization of their goals."
—*Kirill Sopot, co-founder of Coliving Club in San Francisco*

Co-living startups are looking beyond the tech industry for boarders. The **Embassy Network** house in San Francisco emphasizes its draw as a friendly environment for artists and musicians. In New York, where according to Zillow 42 percent of adults have roommates, Farrer Muir says she received more than 300 applications for Common's first 19 spots. The initial residents include nonprofit executives, ad account managers, and graphic designers, along with software developers and startup founders.

That doesn't mean co-living apartments come cheap. Common's residents could live alone for less than the price of having three roommates: The average rent for a studio in Crown Heights is $1,723, according to real estate researcher MNS. Nearby, "Williamsburg already has so many cool apartments, why not just let people post things online and find their ideal match?" asks Ajay Yadav, founder of online roommate-matching service **Roomi**, which launched in San Francisco in October. Hargreaves says the sense of community attracts applicants willing to pay a premium. Sopot's Coliving Club charges a much lower $960 a month per person, but at least two people generally share each bedroom. Sopot says his residents "are not searching for privacy. They are searching for realization of their goals."

Some people, of course, may decide more privacy is one of their goals. This year, *Fast Company* reporter Sarah Kessler spent six months living in a Brooklyn co-living apartment run by startup Campus and quickly became frustrated having to make small talk every time she wanted to use the bathroom. New York University psychologist Niobe Way, who studies the impact of the Internet on social relationships, says facilitating interpersonal connections isn't as easy as cutting down on personal space. "People want the connection so badly but don't want to put in the time to make it happen," she says. "You don't want the alienating feeling of staying in a hotel, even if you think you want that."

High overhead may be a bigger problem. Campus shut down at the end of August, citing a lack of profitability. Hargreaves says that won't happen to Common, because it's expanding more carefully with a small number of longer-term, 10- to 15-year leases. "We're long-term incentivized to build a community," he says. "We're not hiring some third-party property manager to just deal with it."

As Common scouts for its next buildings in Brooklyn, though, it's finding it tough to ignore the reality of New York's real estate market: There's always someone willing to pay more. Just outside the Crown Heights apartment, Hargreaves looks at the warren of temporary plywood walls around a number of construction sites. "They're building condos right there," he says. Those well-appointed dwellings are likely to be Common's biggest competition. It turns out not even startups are safe from gentrification. —*Kyle Chayka*

The bottom line Common has raised $7.4 million to woo millennials with techified apartments promising convenience and community.

E-Commerce

Farfetch Tries to Reach a Little Further

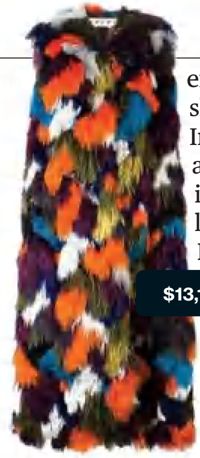
▶ **The luxury clothing aggregator has hungry investors to please**

▶ **"They're selling things that actually are a little bit edgy"**

José Neves's online retail company, Farfetch, connects tiny, ultrahigh-end clothing boutiques in 30 countries to shoppers around the world. Farfetch is the site to visit if you simply must have that $13,140 rainbow-patterned, sleeveless llama fur coat by Marni delivered posthaste to your yacht in Capri.

As with any popular clothier, Neves's challenge is to widen his business without losing the patina of relative

COURTESY FARFETCH (2)



exclusivity. (His site's slogan is "Unfollow.") In March, Farfetch announced $86 million in funding from the likes of **Condé Nast** and **DST Global** at a valuation of $1 billion. It's spent the rest of 2015 pouring that money into expansion, adding 250 workers to its existing 750 to scout boutiques and business lines. Neves says his company will sell more than $500 million worth of clothes and accessories this year, up from $300 million in 2014.

"The flavor, the fuel of the brand, is a boutique feel. It's all about uniqueness of expression, of individual taste," Neves says, clad in a conservative black button-down at Farfetch's London headquarters, a converted factory painted stark white, in the hipster-heavy Clerkenwell neighborhood. "But I don't think that's incompatible with big numbers."

Farfetch indexes and promotes designs from tiny, tony shops that might stock a few dozen bold items each season for a cadre of loyal customers. (Think shiny, $2,000 "coated biker jeans" by Balmain.) In other words, it acts as a luxe ShopStyle for merchants who don't want to build or run their own websites. Farfetch handles shipping and returns for boutiques from Mumbai to Memphis to Madrid and takes an undisclosed cut from each sale.

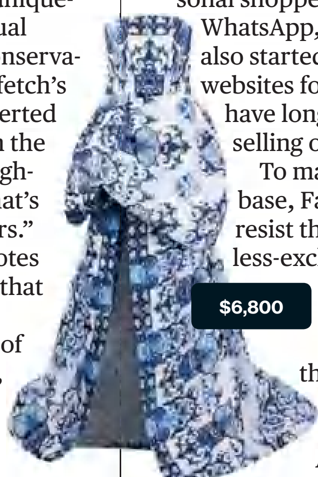
Founded in 2008, Farfetch distinguished itself by featuring high-end clothes typically too out-there for Barneys, made by designers well beyond New York and London—like a $6,800 Monique Lhullier silk evening dress modeled on the shape and pattern of an 18th century French jug. Online pioneers such as **Gilt Groupe** and **Net-a-Porter** specialize in slick, Web-savvy presentation and quick delivery of more mainstream, high-end items, such as a classic black wool blazer by Dolce & Gabbana for about $3,000, which was among the featured items in one of Net-a-Porter's latest house magazines.

$1
billion

Farfetch's valuation for its most recent fundraising round of $86 million

Farfetch is "not just selling things that you could find in the Main Street of a big town or a big city," says Neil Saunders, managing director of retail consulting firm Conlumino. "They're selling things that actually are a little bit edgy, things that have come from the runway."

Like many sites operating in the $243 billion global luxury market, Farfetch isn't profitable. To goose growth as it expands, the company has begun customizing shoes, sourcing clothes from boutiques in India and the Middle East, and offering a personal shopper service via e-mail, WhatsApp, or home visits. It's also started contracting to build websites for fashion brands that have long shied away from selling online.



To maintain its customer base, Farfetch will have to resist the temptation to offer less-exclusive brands or larger discounts, says Milton Pedraza, chief executive officer of the Luxury Institute, a consulting firm that works with Alexander McQueen, Burberry, and Hermès. Keeping customers coming back is a huge challenge for even the best-curated sites, many of which are overvalued, says Victor Basta, managing partner at investment bank Magister Advisors. That means businesses often "have to run to stand still," he says. They have to "continually reacquire the customer through more marketing and repeated special offers."

Neves says there's plenty of opportunity for growth in markets such as China, India, and especially Russia, where he says Farfetch is growing by "triple digits" despite an economic crisis. He's also diversifying with brick-and-mortar shops. In May, Farfetch bought Browns, a boutique in London's Mayfair district credited with discovering McQueen and John Galliano, and Neves says Browns will start adding items from the site in December. He also says he's planning to set up image-recognition software that can identify a customer entering the shop and glean from electronic records whether she'd like help, a dressing room, or a heads-up that a jacket she tried on a month ago is now on sale.

Although boutiques need to keep thinking more digitally, "the physical store won't go away," Neves says. "Fashion is not downloadable." —*Amy Thomson and Matthew Campbell*

The bottom line Farfetch says it's moving $500 million in goods this year, a 66 percent jump, as it expands and courts new merchants.

Hardware

Your Next TV May Come From New Jersey

▶ **A Trenton-area company holds most patents on OLED screens**

▶ **After years in obscurity, prices "seem to be hitting a sweet spot"**

Some of the world's biggest electronics makers are trying to sell consumers on a sharper TV screen made from organic light-emitting diodes, or OLEDs. **LG** has taken the lead in pushing the pricey technology over the dimmer liquid-crystal displays in most sets, and gradually costs have dropped enough for a 55-inch LG OLED TV to go for $1,800 at Best Buy, about the same as a comparable high-end **Samsung** LCD screen. Now **Panasonic** and China's **Skyworth** are getting into the act, too. The manufacturer that may have the most at stake, however, is one with a market value of $1.9 billion, headquartered not in a tech hot spot, but on the outskirts of Trenton, N.J.

Universal Display Corp. sits a few miles from the Lower Trenton Bridge, with the famous neon letters spelling out TRENTON MAKES THE WORLD TAKES. Since its 1994 founding, UDC has focused primarily on advancing OLED technology and has led the development of more energy-efficient screens. For years it has controlled the patents on some of the most cutting-edge OLED materials. UDC has licensed its technology to Samsung for use in Galaxy smartphones since 2011, and in January it signed a licensing deal with LG through 2022. ▶

◀ Licensing fees make up about a third of UDC's $191 million in annual revenue, and the rest comes from selling the materials needed to make the screens. On Nov. 5, UDC reported earning $7 million in the third quarter, a 64 percent increase from the same period a year earlier, on sales of $39.4 million. Profit this year should top $48 million and reach $70 million in 2016, according to analyst estimates compiled by Bloomberg. "Our materials are essential" for the big manufacturers, says Chief Executive Officer Steve Abramson. OLED TV prices, he says, "seem to be hitting a sweet spot."

This year, LG more than doubled capacity at its OLED factory near the Demilitarized Zone on the Korean Peninsula, to 34,000 7.2-foot-by-8.2-foot sheets each month. In July the company announced plans to invest 1 trillion won ($866 million) in a new factory southeast of Seoul and is making screens for brands such as Panasonic and China's **Konka**. LG says it expects to ship 1 million OLED TV screens next year, up from about 500,000 in 2015. In the past few months, Samsung has started putting OLEDs in its cheaper phones as well as the Galaxy line, and **Apple** uses them in its smartwatch. "There is no competition" for UDC's designs, says Robert Stone, an analyst for Cowen Group.

That may soon change, says Lawrence Gasman, an analyst at N-tech Research, which specializes in analysis of advanced materials. UDC "clearly lives and dies on its intellectual property, and that's beginning to be challenged," he says. Most notably, chemical giant **DuPont** opened a factory in Newark, Del., in September. Avi Avula, DuPont's global business director for OLEDs, says the company is refining materials that within a few years could make its production process five times as efficient as UDC's. Manufacturers using UDC's materials must vaporize them and condense the vapor onto glass to make screens, but DuPont says its materials can eventually be 3D-printed directly onto the glass, Avula says.

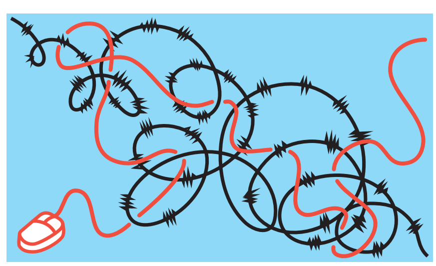
Abramson says he's not worried about competition for now. UDC has formed a partnership with **BOE Technology** to help the Beijing company develop its own OLED manufacturing. Although **Qualcomm**, which also relies on licensing fees, has faced difficulty collecting them in China, Abramson says UDC has confidence in the working relationship it's establishing with local manufacturers. Last year, BOE announced plans to invest $3.5 billion in an OLED factory scheduled to open in 2017.

Understandably, UDC's shares—up 46 percent this year, to about $41—sharply rise or fall with the fortunes of OLED sellers, whether or not they're customers. The stock jumped 9.5 percent on Oct. 9 following strong results from Samsung, then plunged 11 percent a week later after Goldman Sachs forecast disappointing demand for OLED TVs this year and next. Korean news outlets reported last month that Apple was considering putting OLEDs in its iPhones, but Abramson declined to speculate on that. "Apple," he says, "doesn't make a whole lot of announcements." —*Bruce Einhorn*

The bottom line Analysts predict profit will jump almost 50 percent next year at UDC, two decades into its investment in OLEDs.

E-Commerce

Online Shopping Behind Bars



▶ **Russia's Amazon for prisoners helps deliver goods and e-mails**

▶ **"The last decade has been almost revolutionary"**

Russian prisons have come a long way since Stalin forced inmates in the Gulag to dig canals and chop wood, but they don't feel exactly modern. For each of the country's 644,000-odd inmates, purchasing everyday items typically involves asking a relative to wait for hours in line at a Soviet-style prison store. Letters can take weeks to send back and forth.

To make interaction with the outside world a little easier, the Gulag's successor, the Federal Penitentiary Service (FSIN), has begun working with companies that offer online services to prisoners. Although inmates aren't permitted to use the Internet, even under supervision, relatives or friends can send them e-mails and order goods on their behalf. Guards scan handwritten letters from prisoners and use e-mail to send the replies.

69.1 thousand

Purchases via Zakaz from January to August, about double that of the same period in 2014

Russian Internet pioneer Konstantin Antsiferov runs **FSIN-Zakaz**, the largest of the prison system's emerging online stores. From January to August, the number of purchases from the six-year-old company almost doubled from the same period last year, he says, totaling 69,100 orders. His company charged a 285-ruble ($4.38) fee on each. The most popular items include mineral water, Pepsi, Lipton tea, Mars and Twix bars, and roll-on deodorant, he says. The best-selling book on the site is the Russian criminal code, which outlines federal law and punishments.

Antsiferov also owns **FSIN-Pismo**, a sister company that prints e-mails to prisoners and sends back their scanned, handwritten letters. As with paper letters, e-mails are screened and censored. FSIN-Pismo charges senders 55 rubles per e-mail to or from an inmate; last year it facilitated the transmission of 320,000 messages, Antsiferov says. In 2014 he started **Prisonmail.eu**, a venture with former Dutch Prison Services executive Rob Hollander, to set up comparable systems in the Netherlands, Georgia, and Lithuania.

Some European countries, including Norway and Belgium, already offer restricted e-mail services for inmates, says Steven van de Steene, an IT specialist at the International Corrections and Prisons Association, an industry group. U.S. private prisons have taken the lead in e-commerce, he says. Inmates at some U.S. lockups can use the Internet under supervision, or

scan forms or use ATM-like machines, to order goods from prison suppliers. “The last decade has been almost revolutionary in terms of allowing and delivering digital services to inmates,” Van de Steene says.

Antsiferov has run a Web-hosting business in St. Petersburg since the late 1990s, with customers including local branches of the Ministry of Justice. He began thinking about working with FSIN, which maintains the world’s third-largest prison population, in the mid-2000s, while volunteering to manage budgets for the psychiatric department at the city’s Kresty prison. “The country has about 1,000 prisons across its vast territory, and they all have different suppliers,” Antsiferov says. His businesses now operate in about 400. (They’ve stayed out of Moscow, where the prisons use rival website **Skladsizo.ru**. Skladsizo declined to comment.) Antsiferov started Zakaz and Pismo—which have seven employees between them—with his own money but wouldn’t say how much.

Inmates receiving Zakaz orders are still pretty much stuck with the inventory of their prison store. Buying products from outside retailers isn’t really an option, because guards looking for contraband chop up anything brought in by another party. Ekaterina Shutova, a civil rights activist who spent eight months in prison for embezzlement four years ago, says cigarettes and fruit baskets she received from friends usually arrived as piles of dry tobacco and messy fruit salads. She’s using Zakaz to buy prison store items for friends still inside.

Antsiferov says Russia’s penitentiary system doesn’t leave much room for him to raise prices, because prison stores already charge at least 20 percent more than a typical city supermarket. “Prices are much higher than in common grocery stores,” Shutova says. Still, she says, there’s a clear advantage: “You can make an order from home, instead of waiting in these crazy queues.” —*Ilya Khrennikov*

The bottom line A Russian businessman is collecting hundreds of thousands of dollars in fees for prison e-commerce services.

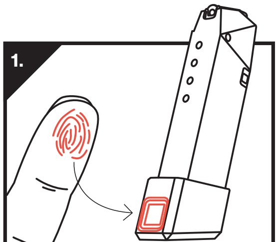
Edited by Jeff Muskus
Bloomberg.com

Innovation

Biometric Ammo

Form and function
Clipfort’s sensor-equipped magazines have fingerprint identification to prevent an unauthorized user from loading ammunition. The biometrics, built into the clip, are being designed for most guns, the company says.

Innovator Daniel Biran
Age 52
Co-founder of two-year-old, 15-employee startup Clipfort in Kfar Saba, Israel



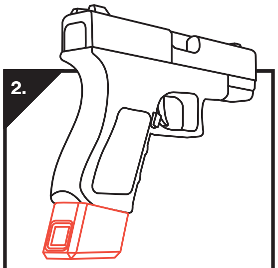
Lock The fingerprint sensor on the bottom of the clip is programmed at purchase to match the owner’s print. It works 99,999 times out of 100,000, the company says.

Origin Biran, who previously made biometric memory sticks, began working on gun safety following the 2012 Sandy Hook massacre.

Prototypes Clipfort has developed magazines for the M16 rifle and a range of pistols.

Price The company says it plans to charge $150 to $200 for the clips, which can be refilled with new bullets.

Funding Clipfort says it has raised $2 million from investors and is looking for $4 million more by yearend.



Load ID confirmation takes 0.7 seconds. Given a match, the clip can load bullets until the magazine is removed from the gun.

Next Steps
Clipfort has joined with gun manufacturer Check-Mate Industries to begin mass production by the end of next year. Adam Winkler, a UCLA law professor and author of *Gunfight: The Battle Over the Right to Bear Arms in America*, says that even though Clipfort has strenuously avoided taking a position on U.S. gun laws, “many gun enthusiasts will see this as a back door to restricting their Second Amendment rights”—and pressure retailers to keep the magazines off their shelves. —*Yaacov Benmeleh*

Bitcoin Can't Keep It Chill

▶ A price spike and plunge renews questions about the currency's viability

▶ "If it doesn't have a stable value, it's probably not going to survive"

This was looking like the year that bitcoin would finally move beyond its sketchy reputation as an anonymous way to buy drugs and stolen credit cards. Banks had started to study how they could use the six-year-old digital currency to update the world's outdated money transfer mechanisms; and its price swings were becoming less extreme, making it less risky for ordinary folks to use.

Then bitcoin's price inexplicably spiked 98 percent in three weeks, touching $502 on Nov. 4, before dropping 20 percent the next day. That's the kind of unruly fluctuation you might expect in a penny stock, not an invention that's been hyped as a trustworthy replacement for unreliable government-issued money.

While it's impossible to determine exactly why the currency went wild, the fluctuation came just as people around the world were discovering a new use for bitcoin: investing in MMM, an online pyramid scheme that's promising returns as high as 100 percent a month. Data from Internet tracker Alexa show traffic to MMM's websites taking off in October. More than 30,000 participants have posted testimonials on YouTube, mainly from China, the Philippines, and South Africa.

MMM was founded by Sergei Mavrodi, a Russian who's been running variations of it since the country's Wild West days of privatization. He evaded prosecution for a decade, at one point running for Parliament to gain immunity and winning, before serving four and a half years for fraud. His latest pitch: convert your bitcoins to another online currency called mavros and see your account balance grow. "The financial apocalypse is inevitable," he said in a video posted on Nov. 8. "Together we change the world!" Mavrodi has said that he doesn't violate any laws or take money for himself.

Bitcoin proponents say they doubt Mavrodi's scheme is big enough to move the exchange rate, with more than $100 million of the digital currency bought and sold every day. "It's certainly not the only thing driving demand for bitcoin," says Gil Luria, an analyst for Wedbush Securities who tracks the currency.

Of course, a lot of the other uses are also illicit. A 33-year-old in Texas pleaded guilty in September to running a different Ponzi scheme that at one point controlled 7 percent of all bitcoins. Hackers who take control of private computers and demand ransom from their owners, like those behind the CryptoLocker malware, often ask to be paid in bitcoin. And the trade in online narcotics is thriving in new marketplaces such as Agora and Middle Earth Marketplace, even after the FBI busted the biggest one, Silk Road, in 2013, and its successor, Silk Road 2.0, the next year.

"Blockchain is like any other technology. If it is cheaper, effective, works, and secure, then we are going to use it."
—*Jamie Dimon*

Scammers seem to be the biggest bitcoin users partly because of the volatility: Few others are ready to conduct their business in a currency that can lose a quarter of its value overnight. While retailers and other consumer companies like to get free publicity by saying they accept bitcoin, most instantly convert payments into dollars. "If it doesn't have a stable value, it's probably not going to survive," Eugene Fama, the Nobel prize-winning economist, said on a recent podcast.

Looking back, bitcoin seems almost designed to encourage speculation. It initially was doled out in tiny amounts to "miners," the people who contributed computing capacity to power the bitcoin network. Some of those early adopters got rich in 2011 when the website **Gawker** publicized Silk Road, and the price of a bitcoin went from $1 to $32. The chatter around newly minted bitcoin millionaires attracted speculators. The price topped $1,000 in 2013, then collapsed when one of the biggest exchanges, Mt. Gox, disclosed that $480 million in bitcoin had mysteriously disappeared and filed for bankruptcy.

Bitcoin evangelists say it will come into its own as more people start using it to buy stuff, rather than just holding on to it, hoping to make a killing. To execute a large volume of transactions, each bitcoin would have to be worth a significant amount in dollar terms, because the supply is fixed. Wedbush's Luria projects bitcoin will be used in 1 percent or 2 percent of online transactions within five years, about 80 times more than today. To handle that level of activity, which would amount to $126 billion in transfers a year, the price would have to rise to $1,429, he says.

One threat to bitcoin is that banks could render it superfluous by co-opting the blockchain, its main innovation. That's the encrypted database, distributed among users' computers, enabling transactions to be recorded without the help of a central authority. If big companies set up distributed databases to transfer dollars or euros quickly and cheaply enough, there'd be no need for digital currencies. "Blockchain is like any other technology," **JPMorgan Chase** Chief Executive Officer Jamie Dimon said in November at the Fortune Global Forum. "If it is cheaper, effective, works, and secure, then we are going to use it."

Meanwhile, the currency seems destined to remain the stuff that get-rich-quick dreams are made of. Fred Ehrsam, co-founder of the bitcoin exchange Coinbase, believes in the currency's future. For now, though, he says, "Most people who are buying and selling bitcoin don't fully understand it. They have it ingrained in their heads that it's just going to keep going up." —*Zeke Faux, with Olga Kharif*

The bottom line Bitcoin's three-week 98 percent spike hurts its prospects for becoming a currency for ordinary transactions.

Real Estate

From Vulture Investor To Land Baron

▶ **Ken Dart has become the top developer in the Cayman Islands**

▶ **He's "starting to control a substantial part of the...economy"**

Two decades after billionaire bond investor Ken Dart renounced his U.S. citizenship and settled in the Cayman Islands, he's emerged as the biggest landholder in his adopted home. The investor is little interested in the distressed foreign debt that made his fortune. He's turning his focus to luxury real estate development in Latin America as well as the Cayman Islands, according to Mark VanDevelde, chief executive officer of the tycoon's **Dart Enterprises** holding company. Distressed debt "is a small part of our overall portfolio," says VanDevelde. "We had demand for office tenants, so that's where growth has been since conception. We're now shifting our focus towards resorts and residential."

One of three sons of the late founder of Dart Container, known for its Styrofoam cups, Ken, 60, stepped down as president of the company last year and is no longer a shareholder, according to Tony Wilbert, a spokesman for Dart Enterprises.

Dart's mid-1990s move to the Caribbean was widely criticized as a brazen tax dodge. Today he's often seen strolling the grounds of Camana Bay, the town he developed, which includes homes, a marina, and offices that cater largely to hedge funds and other financial companies. A five-star Four Seasons hotel may soon join the development, all linked by a network of bike paths. Camana Bay is the centerpiece of Dart's property holdings, which now account for about 8 percent of the land in the Cayman Islands. But you'd never know any of this belonged to Dart. There's only a small, unassuming placard on the entrance to one of the development's offices with his name on it.

He's also bought land for development in Turks and Caicos, the Bahamas, and at least 10 other countries. VanDevelde says that even as Dart builds luxury resort developments, he's setting aside land for conservation. "He has lands around the globe, hundreds of thousands of acres in Patagonia, Australia, New Zealand, U.S., Mexico, Jamaica, Canada. And most of those lands are in remote, pristine areas," he says. "The locations ▶

Camana Bay

Acres 600 **Features** Helipad; tennis court where Richard Branson, dressed as a lemur, played Anna Kournikova in March; shops; restaurants **Plans** $300 million expansion unveiled in February

COURTESY DART REALTY (CAYMAN) LTD. DATA: BLOOMBERG

Tweeted

"Sorry Japan, printing money is morphine. makes u feel better but doesn't cure"

Neel Kashkari, incoming president of the Federal Reserve Bank of Minneapolis, commenting in March 2013 on Bank of Japan actions. The tweet came to light as reporters looked for clues to his policy views.

◀ lend themselves to conservation efforts because they are remote."

In the Cayman Islands, Dart's projects have helped counter the economic woes wrought by the 2008 financial crisis. During the slump, assets under management of some 10,000 hedge funds registered on the island dropped by almost half from $3.4 trillion, according to Anthony Travers, chairman of the Cayman Islands Stock Exchange. In 2009 the local economy contracted 7 percent. Dart has boosted the economy by headquartering his global investing and real estate business at his resort and office development. He manages a $5 billion fortune, including about $700 million in at least 10 biotech companies, as well as billions in profits from decades of distressed debt investments from Argentina, Brazil, and Greece.

"We've had seven lean years, and if it hadn't been for Dart the local economy would've looked a lot worse," says Travers. "But there is a big question mark on where Dart's involvement in the Cayman Islands ends up. He is starting to control a substantial part of the local economy."

In 2010, Dart signed a $400 million deal with the government. Among other things, it provided the permits he needed to build a waste treatment facility, extend a highway, and redevelop an abandoned Marriott site. As part of the deal, he agreed to build a professional career training center and provide $16 million for social programs. The plan raised the ire of some islanders, who objected that it was pushed through without proper approvals and came with extensive tax and duty concessions, according to a report released in June by the government's auditor general. The criticism hasn't slowed Dart's expansion. He's in the middle of negotiating a similar deal with the government. "If you're worth billions and got limitless cash," says the stock exchange's Travers, "things happen." —*Blake Schmidt*

The bottom line Dart's Camana Bay development and other holdings of his account for about 8 percent of Cayman Islands land.

Investing

CEOs: Apologize, But Keep It Manly

▶ **To investors, too much contrition is a sign of weakness**

▶ **"The more empathy... the more they get slammed by the market"**

Publicists are quick to tell clients what to do when the corporate nightmare of a misbehaving executive or a faulty product erupts: apologize, with feeling. The consultant who coached ice cream maker **Blue Bell Creameries** on a mea culpa after a deadly listeria outbreak in April has chief executive officers read their talking points three times—once aloud, once to himself, and again aloud—to make sure they sound authentic. "The key is to feel the message points, not just recite them," says Blue Bell adviser Gene Grabowski, a former PR News Crisis Manager of the Year.

Stock market investors have their own feeling about contrition, according to new research: lose it. Two business professors who analyzed more than 100 corporate apologies over three decades through 2012 found that those demonstrating the most emotion also experienced the steepest declines in share price over the following week. "The more empathy the company shows, the more they promise follow-through, the more they get slammed by the market," says DePaul University ethicist Daryl Koehn of her research with Maria Goranova, who teaches management at the University of Wisconsin at Milwaukee.

The two put together a database spanning **Johnson & Johnson**'s 1982 recall of poisoned Tylenol tablets to **BP** CEO Tony Hayward's infamous "I'd like my life back" crack weeks after the 2010 Gulf oil spill. The professors ranked apologies on a sliding scale of completeness. They figured the perfect apology would acknowledge responsibility, identify the harm, show a wise character, be delivered in person and on time, display empathy for victims, and promise follow-through.

No apology in their database rated as perfect, and only three got the next-best score. One came from **Intuit**, whose CEO, Brad Smith, wrote customers in 2010 to "deeply apologize for the pain" it caused them after an outage affecting such popular software as Quicken and TurboTax. The company's stock fell 4 percent over the next week.

When **Yahoo!** CEO Scott Thompson apologized for discrepancies in his résumé in 2012, his statement took responsibility for the distraction he'd caused, not the errors, and promised to "keep moving forward." The professors scored his apology a zero. The stock rose for several days afterward, though Thompson eventually resigned.

What the researchers had hoped to prove was that investors valued

Heartfelt

"I deeply apologize for the pain we have caused.... there is simply no excuse."
—**Brad Smith**, Intuit CEO, on June 17, 2010, after an outage brought down TurboTax and other popular online programs

Stock impact

–4% over the next week

Perfunctory

"I am hopeful that this matter will be concluded promptly.... In the meantime, we have a lot of work to do."
—**Scott Thompson**, Yahoo! CEO, on May 7, 2012, responding to discrepancies found in his biography

Stock impact

+1% over the next week

DAVID PAUL MORRIS/BLOOMBERG

the most ethically sound apologies. Instead, the strongest finding was the negative reaction to empathy. By contrast, CEOs who identified the problem and took responsibility for it, without any empathy, got a small stock increase.

One reason empathy may disturb investors is that it's often considered a feminine trait or a sign of weakness, the researchers speculated. All the apologizers they studied were men. A 2007 report on CEO appointments found that corporate stock prices fell more steeply when the new leader was a woman.

Another possible interpretation, according to Koehn: "If you're showing all that pathos, empathy, and emotional connection with your audience, the stock market might say, 'They're actually going to do something.' And that's going to cost money."

Whatever the market risks, in an era when anyone with a mobile phone can publicize wrongdoing around the world, there's little alternative to apologizing, says Richard Levick, a Washington-based publicist who's advised Wall Street banks and the Catholic Church. And, as he likes to tell clients, saying you're sorry is cheap. Levick cites a 2009 University of Nottingham School of Economics study that found an apology to disgruntled customers was more effective than cash. Only 23 percent agreed to withdraw a complaint in exchange for nominal cash compensation, while 45 percent did so after an apology. "Before we're shareholders, before we're consumers, we are human beings," he says.

The Texas ice cream maker Blue Bell isn't publicly traded, so there's no way to judge investor reaction to the recall apology earlier this year. More important, adviser Grabowski says, is that consumers stuck with the brand. When it reappeared in stores this summer, customers lined up to buy it. That response may help prove another point, Koehn says: "The market may be out of step with the ethical expectations of the population at large." —*Peter Robison*

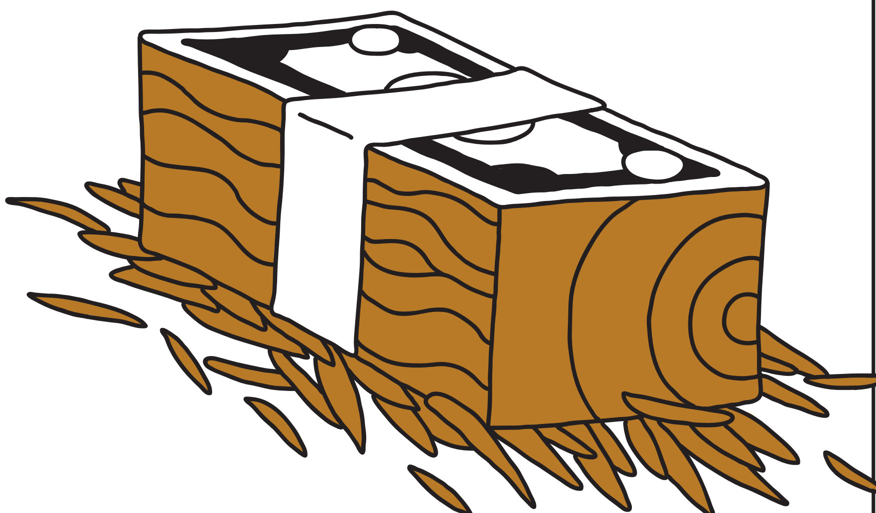
The bottom line While sincere apologies can bring down stock prices, customers prefer a prompt "I'm sorry" to cash compensation.

Edited by Eric Gelman
Bloomberg.com

BID/ASK ILLUSTRATIONS BY OSCAR BOLTON GREEN

Bid/Ask

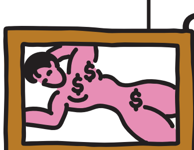
By Kyle Stock

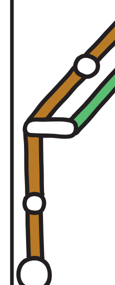


$8.4b

Weyerhaeuser harvests Plum Creek Timber. The deal combines the two largest corporate timberland owners in the U.S., which together own 13.2 million acres, and could result in $100 million in cost savings after a year. Weyerhaeuser's bid is a bet that construction will continue to pick up as the housing recovery grows stronger. The company says it will consider selling its cellulose fibers business.

$6.3b	**Asciano gets a better bid.** A group led by Australian logistics company Qube Holdings topped Brookfield Asset Management's offer for the Australian oil and port operator.
$5.6b	**GE and Alstom ride the rails to India.** The two companies won government contracts to build 1,800 locomotives to shore up the country's crumbling transportation system.
$1.6b	**Anbang Insurance Group buys Fidelity & Guaranty Life.** The purchase brings Beijing-based Anbang 700,000 policyholders in the U.S., where it recently bought New York's Waldorf Astoria.
$800m	**Kroger picks up Roundy's.** Together, the supermarket chains have 2,774 stores. Roundy's, spread throughout Wisconsin and Illinois, will keep its brand name.
$455m	**New Flyer Industries buys Motor Coach Industries.** The deal creates a transportation giant, with New Flyer specializing in inner-city buses and Motor Coach making long-haul cruisers.
$280m	**Blue Coat Systems bolsters its cloud coverage.** The enterprise security giant snapped up Elastica, offering a new layer of threat protection and traffic management to its 15,000 clients.
$170m	**A near-record nude.** A painting of a reclining woman by Modigliani fetched the second-highest auction price for an artwork. Chinese billionaire Liu Yiqian won it at Christie's.





HACKING

A pair of Hospira infusion pumps: The federal government has warned that they may be vulnerable to cyber attacks

These devices can save your life—or steal your identity

HOSPITALS

By Monte Reel and Jordan Robertson
Photographs by Graeme Mitchell

In the fall of 2013, Billy Rios flew from his home in California to Rochester, Minn., for an assignment at the Mayo Clinic, the largest integrated nonprofit medical group practice in the world. Rios is a "white hat" hacker, which means customers hire him to break into their own computers. His roster of clients has included the Pentagon, major defense contractors, Microsoft, Google, and some others he can't talk about. He's tinkered with weapons systems, with aircraft components, and even with the electrical grid, hacking into the largest public utility district in Washington state to show officials how they might improve public safety. The Mayo Clinic job, in comparison, seemed pretty tame. He assumed he was going on a routine bug hunt, a week of solo work in clean and quiet rooms.

But when he showed up, he was surprised to find himself in a conference room full of familiar faces. The Mayo Clinic had assembled an all-star team of about a dozen computer jocks, investigators from some of the biggest cybersecurity firms in the country, as well as the kind of hackers who draw crowds at conferences such as Black Hat and Def Con. The researchers split into teams, and hospital officials presented them with about 40 different medical devices. Do your worst, the researchers were instructed. Hack whatever you can.

Like the printers, copiers, and office telephones used across all industries, many medical devices today are networked, running standard operating systems and living on the Internet just as laptops and smartphones do. Like the rest of the Internet of Things—devices that range from cars to garden sprinklers—they communicate with servers, and many can be controlled remotely. As quickly became apparent to Rios and the others, hospital administrators have a lot of reasons to fear hackers. For a full week, the group spent their days looking for backdoors into magnetic resonance imaging scanners, ultrasound equipment, ventilators, electroconvulsive therapy machines, and dozens of other contraptions. The teams gathered each evening inside the hospital to trade casualty reports.

"Every day, it was like every device on the menu got crushed," Rios says. "It was all bad. Really, really bad." The teams didn't have time to dive deeply into the vulnerabilities they found, partly because they found so many—defenseless operating systems, generic passwords that couldn't be changed, and so on.

The Mayo Clinic emerged from those sessions with a fresh set of security requirements for its medical device suppliers, requiring that each device be tested to meet standards before purchasing contracts were signed. Rios applauded the clinic, but he knew that only a few hospitals in the world had the resources and influence to pull that off, and he walked away from the job with an unshakable conviction: Sooner or later, hospitals would be hacked, and patients would be hurt. He'd gotten privileged glimpses into all sorts of sensitive industries, but hospitals seemed at least a decade behind the standard security curve.

"Someone is going to take it to the next level. They always do," says Rios. "The second someone tries to do this, they'll be able to do it. The only barrier is the goodwill of a stranger."

Rios lives on a quiet street in Half Moon Bay, a town about 25 miles south of San Francisco, pressed against a rugged curl of coastline where scary, 50-foot waves attract the state's gutsiest surfers. He's 37, a former U.S. Marine and veteran of the war in Iraq. In the Marines, Rios worked in a signals intelligence unit and afterward took a position at the Defense Information Systems Agency. He practices jiu-jitsu, wanders the beach in board shorts, and shares his house with his wife, a 6-year-old daughter, and a 4-year-old son. His small home office is crowded with computers, a soldering station, and a slew of medical devices.

Shortly after flying home from the Mayo gig, Rios ordered his first device—a Hospira Symbiq infusion pump. He wasn't targeting that particular manufacturer or model to investigate; he simply happened to find one posted on EBay for about $100. It was an odd feeling, putting it in his online shopping cart. Was buying one of these without some sort of license even legal? he wondered. Is it OK to crack this open?

Infusion pumps can be found in almost every hospital room, usually affixed to a metal stand next to the patient's bed, automatically delivering intravenous drips, injectable drugs, or other fluids into a patient's bloodstream. Hospira, a company that was bought by Pfizer this year, is a leading manufacturer of the devices, with several different models on the market. On the company's website, an article explains that "smart pumps" are designed to improve patient safety by automating intravenous drug delivery, which it says account for 56 percent of all medication errors.

"The FDA seems to literally be waiting for someone to be KILLED before they can say, 'OK, yeah, this is something we need to worry about' "

Rios connected his pump to a computer network, just as a hospital would, and discovered it was possible to remotely take over the machine and "press" the buttons on the device's touchscreen, as if someone were standing right in front of it. He found that he could set the machine to dump an entire vial of medication into a patient. A doctor or nurse standing in front of the machine might be able to spot such a manipulation and stop the infusion before the entire vial empties, but a hospital staff member keeping an eye on the pump from a centralized monitoring station wouldn't notice a thing, he says.

In the spring of 2014, Rios typed up his findings and sent them to the Department of Homeland Security's Industrial Control Systems Cyber Emergency Response Team (ICS-CERT). In his report, he listed the vulnerabilities he had found and suggested that Hospira conduct further analysis to answer two questions: Could the same vulnerabilities exist in other Hospira devices? And what potential consequences could the flaws present for patients? DHS in turn contacted the Food and Drug Administration, which forwarded the report to Hospira. Months passed, and Rios got no response from the manufacturer and received no indication that government regulators planned to take action.

"The FDA seems to literally be waiting for someone to be killed before they can say, 'OK, yeah, this is something we need to worry about,' " Rios says.

Rios is one of a small group of independent researchers who have targeted the medical device sector in recent years, exploiting the security flaws they've uncovered to dramatic effect. Jay Radcliffe, a researcher and a diabetic, appeared at the 2011 Def Con hacking conference to demonstrate how he could hijack his Medtronic insulin pump, manipulating it to deliver a potentially lethal dose. The following year, Barnaby Jack, a hacker from New Zealand, showed attendees at a conference in Australia how he could remotely hack a pacemaker to deliver a dangerous shock.

In 2013, Jack died of a drug overdose one week before he was scheduled to attend Black Hat, where he promised to unveil a system that could pinpoint any wirelessly connected insulin pumps within a 300-foot radius, then alter the insulin doses they administered.

Such attacks angered device makers and hospital administrators, who say the staged hacks threatened to scare the public away from technologies that do far more good than harm. At an industry forum last year, a hospital IT administrator lost his temper, lashing out at Rios and other researchers for stoking hysteria when, in fact, not a single incident of patient harm has ever been attributed to lax cybersecurity in a medical device. “I appreciate you wanting to jump in,” Rick Hampton, wireless communications manager for Partners HealthCare System, said, “but frankly, some of the *National Enquirer* headlines that you guys create cause nothing but problems.” Another time, Rios was shouted at by device vendors on a conference call while dozens of industry executives and federal officials listened in. “It wasn’t just someone saying, ‘Hey, you suck,’ or something,” Rios remembers, “but truly, literally, screaming.”

“All their devices are getting compromised, all their systems are getting compromised,” he continues. “All their clinical applications are getting compromised—and no one cares. It’s just ridiculous, right? And anyone who tries to justify that it’s OK is not living in this world. They’re in a fantasyland.”

Last fall analysts with TrapX Security, a firm based in San Mateo, Calif., began installing software in more than 60 hospitals to trace medical device hacks. TrapX created virtual replicas of specific medical devices and installed them as though they were online and running. To a hacker, the operating system of a fake CT scan device planted by TrapX would appear no different than the real thing. But unlike the real machines, the fake devices allowed TrapX to monitor the movements of the hackers across the hospital network. After six months, TrapX concluded that all of the hospitals contained medical devices that had been infected by malware.

In several cases, the hackers “spear phished” hospital staffers, luring them into opening e-mails that appeared to come from senders they knew, which infected hospital computers when they fell for the bait. In one case, hackers penetrated the computer at a nurses’ station, and from there the malware spread throughout the network, eventually slipping into radiological machines, blood gas analyzers, and other devices. Many of the machines ran on cheap, antiquated operating systems, such as Windows XP and even Windows 2000. The hospital’s antivirus protections quickly scrubbed the computer at the nurses’ station, but the medical devices weren’t so well guarded.

Rios grew interested in security flaws in medical devices after an assignment at the Mayo Clinic in 2013

Many of the hospitals that participated in the study rely on the device manufacturers to maintain security on the machines, says Carl Wright, general manager for TrapX. That service is often sporadic, he says, and tends to be reactive rather than preventive. “These medical devices aren’t presenting any indication or warning to the provider that someone is attacking it, and they can’t defend themselves at all,” says Wright, who is a former information security officer for the U.S. military.

After hackers had compromised a medical device in a hospital, they lurked there, using the machine as a permanent base from which to probe the hospital network. Their goal, according to Wright, was to steal personal medical data.

A credit card is good only until its expiration date and becomes almost useless as soon as the owner notices that it has been stolen. Medical profiles often contain that same credit card information, as well as Social Security numbers, addresses, dates of birth, familial relationships, and medical histories—tools that can be used to establish false identities and lines of credit, to conduct insurance fraud, or even for blackmail. Simple credit card numbers often sell for less than $10 on the Web’s black market; medical profiles can fetch 10 times as much. For a hacker, it’s all about resale value.

The decoy devices that TrapX analysts set up in hospitals allowed them to observe hackers attempting to take medical records out of the hospitals through the infected devices. The trail, Wright says, led them to a server in Eastern Europe believed to be controlled by a known Russian criminal syndicate. Basically, they would log on from their control server in Eastern Europe to a blood gas analyzer; they’d then go from the BGA to a data source, pull the records back to the BGA, and then out. Wright says they were able to determine that hackers were taking data out through medical devices because, to take one example, they found patient data in a blood gas analyzer, where it wasn’t supposed to be.

In addition to the command-and-control malware that allowed the records to be swiped, TrapX also found a bug called Citadel, ransomware that’s designed to restrict a user’s access to his or her own files, which allows hackers to demand payment to restore that access. The researchers found no evidence suggesting the hackers had actually ransomed the machines, but its mere presence was unsettling. “That stuff is only used for one purpose,” Wright says.

Hospitals generally keep network breaches to themselves. Even so, scattered reports of disruptions caused by malware have surfaced. In 2011, the Gwinnett Medical Center in Lawrenceville, Ga., shut its doors to all non-emergency patients for three days after a virus crippled its computer system. Doctor's offices in the U.S. and Australia have reported cases of cybercriminals encrypting patient databases and demanding ransom payments. Auditing firm KPMG released a survey in August that indicated 81 percent of health information technology executives said the computer systems at their workplaces had been compromised by a cyber attack within the past two years.

Watching all this, Rios grew anxious for federal regulators to pay attention to the vulnerabilities he'd found in the Hospira pump. In the summer of 2014 he sent reminders to the Department of Homeland Security, asking if Hospira had responded to his suggestions. According to an e-mail from DHS, the company was "not interested in verifying that other pumps are vulnerable."

A few weeks after he received that message, an increasingly frustrated Rios found himself in a vulnerable position: immobilized in a hospital bed, utterly dependent upon, of all things, an infusion pump.

Late last July, Rios began snoring loudly, which interrupted his sleep enough that he went to a doctor, who discovered a polyp inside his nose, near the cerebral membrane. The polyp was removed—a simple outpatient procedure—but days later Rios developed a fever and noticed clear liquid leaking from his nose. Years before, he'd broken it, and the doctors thought the polyp had grown around scar tissue. When the polyp was removed, some of the scar tissue that had protected his brain casing must have been clipped, too. The clear liquid coming out of his nose was cerebral fluid.

He spent two weeks at Stanford Hospital, in a room filled with the kind of gadgetry he'd been breaking into. After a few dazed days in bed, he got his bearings and assessed his situation. His bed was plugged into a network jack. The pressure bands strapped around his legs, which periodically squeezed his calves to aid circulation, were also connected to a computer. He counted 16 networked devices in his room, and eight wireless access points. The most obvious of these was the CareFusion infusion pump, a brand he hadn't looked into yet, that controlled the fluids being pumped into his arm. "It wasn't like I was going to turn to the doctor and say, 'Don't hook me up to that infusion pump!' " Rios recalls. "I needed that thing."

He noticed that the other patient in his room, separated from him by a curtain, was connected to a Hospira pump. "I kept thinking, 'Should I tell him?' " Rios says. He opted for silence.

There are now so many devices in Rios's home waiting to be examined that they fill his office and are overflowing into his garage

When he was able to drag himself out of bed, Rios wheeled his infusion pump into the bathroom, where he gave it a good once-over. "I'm looking at the wireless card, pushing the buttons on it, seeing what menus I can get to," he recalls. It only inflamed his concerns. "Whatever Wi-Fi password they're using to let the pump join the network, I could get that off the pump pretty easily."

In the hallway just outside his room, Rios found a computerized dispensary that stored medications in locked drawers. Doctors and nurses normally used coded identification badges to operate the machine. But Rios had examined the security system before, and he knew it had a built-in vulnerability: a hard-coded password that would allow him to "jackpot" every drawer in the cabinet. Such generic passwords are common in many medical devices, installed to allow service technicians to access their systems, and many of them cannot be changed. Rios and a partner had already alerted Homeland Security about those password vulnerabilities, and the agency had issued notices to vendors informing them of his findings. But nothing, at least at this hospital, had been done. In the hallway, he quickly discovered that all the medications in the device's drawers could have been his for the taking. "They hadn't patched it at this point, so I was testing some passwords on it, and I was like, 'This s--- works!' "

He didn't touch any drugs, he says, but when he was released, he tried to turn up the heat on Hospira. He'd already told the federal government that he knew how to sabotage the pumps, but after he returned home he decided to make a video to show them how easily it could be done. He aimed the camera directly at the infusion pump's touchscreen and demonstrated how he could remotely press the buttons, speeding through password protections, unlocking the infuser, and manipulating the machine at will. Then he wrote out sample computer code and sent it to the DHS and the FDA so they could test his work for themselves.

"We have to create videos and write real exploit code that could really kill somebody in order for anything to be taken seriously," Rios says. "It's not the right way."

But it got the FDA's attention. Finally, after more than a year of hectoring from Rios, the FDA in July issued an advisory urging hospitals to stop using the Hospira Symbiq infusion pump because it "could allow an unauthorized user to control the device and change the dosage the pump delivers."

"It's viewed as precedent-setting," says Suzanne Schwartz, who coordinates cybersecurity initiatives

for the FDA's Center for Devices and Radiological Health. "It's the first time we've called out a product specifically on a cybersecurity issue."

"There have been no known breaches of a Hospira product in a clinical setting, and the company has worked with industry stakeholders to make sure that doesn't happen," says MacKay Jimeson, a spokesman for Pfizer.

The medical research community didn't break out in celebration over the advisory. Hospira said that it would work with vendors to remedy any problems and that the Symbiq model was off the market. But the advisory was merely that: It didn't force the company to fix the machines that were already in hospitals and clinics, and it didn't require the company to prove that similar cybersecurity flaws didn't also affect its other pump models. For some researchers, the advisory felt like a hollow victory. "It was the moment we realized that the FDA really was a toothless dragon in this situation," says Mike Ahmadi, a researcher active in the medical device sector.

The FDA's challenge is a tricky one: to draft regulations that are specific enough to matter yet general enough to outlast threats that mutate and adapt much faster than the products the agency must certify. The agency finalized a set of guidelines last October that recommended—but didn't require—that medical device manufacturers consider cybersecurity risks in their design and development phases and that they submit documentation to the agency identifying any potential risks they've discovered. But the onus doesn't rest solely on manufacturers; Schwartz emphasizes that providers and regulators also need to address the challenge, which she calls one "of shared responsibility and shared ownership."

Divvying up that responsibility is where things get messy. After the guidelines were published, the American Hospital Association sent a letter to the FDA saying health-care providers were happy to do their part, but it urged the agency to do more to "hold device manufacturers accountable for cybersecurity." It said device vendors need to respond faster to vulnerabilities and patch problems when they occur. Device vendors, meanwhile, have pointed out that criminals can't hack their machines without first breaching the firewalls at hospitals and clinics; so why was everyone talking about regulating the devices when the providers clearly needed to improve their network protections? Hospira, in a statement issued after the FDA advisory, labeled hospital firewalls and network security "the primary defense against tampering with medical devices" and said its own internal protections "add an additional layer of security." Others have suggested that security researchers such as Rios are pressuring the industry to adopt security measures that might get in the way of patient care.

At a forum sponsored by the FDA to discuss the guidelines, an anesthesiologist from Massachusetts General Hospital in Boston used the example of automated medicine cabinets, like the one that Rios had cracked, to make this point. After Rios told the government about the password vulnerability, some hospitals began instituting fingerprint scans as a backup security measure. "Now, one usually wears gloves in the operating room," Dr. Julian Goldman told those at the forum. Fumbling with those gloves, fiddling with the drawer, making sure no contaminated blood got near the exposed hands, yanking the gloves back on—it turned out to be a maddening hassle, he suggested, and a potentially dangerous waste of time. "I can tell you that it certainly brings it home when you suddenly need something," Goldman said, "and as you're turning around to reach for the drawers, you hear click-click-click-click, and they lock, just as you are reaching for the drawers to get access to a critical drug."

"They hadn't patched it at this point, so I was testing some PASSWORDS on it, and I was like, 'This s--- works!'"

Rios says he doesn't care how manufacturers or hospitals fix the problem, so long as they do something. The Hospira saga convinced him that the only way for that to happen is to continue to pressure manufacturers, calling them out by name until they're forced to pay attention. That automated medicine cabinet wasn't the only device he'd found with a hard-coded password; along with research partner Terry McCorkle, Rios found the same vulnerability in about 300 different devices made by about 40 different companies. The names of those vendors weren't released when the government issued its notice about the problem, and Rios says none of them has fixed the password problem. "What that shows me," he says, "is that without pressure on a particular vendor, they're not going to do anything."

Since the FDA's Hospira advisory was issued in July, boxes of medical devices have continued to arrive on Rios's doorstep in Half Moon Bay, and they've crowded his office so much that he's been forced to relocate some to his garage. No one is paying him to try to hack them, and no one is reimbursing his expenses. "I've been lucky, and I've done well, so it's not that big of a deal for me to buy a $2,000 infusion pump and look at it whenever I have time," he says.

For novice independent researchers, however, access to devices can be a forbidding barrier to work in this field. Infusion pumps are relatively affordable, but MRI machines, for example, cost hundreds of thousands of dollars, if not more. And radiological equipment requires a special license. To encourage more research on devices, Rios is trying to establish a lending library of medical equipment; he and a group of partners have begun lobbying hospitals for used devices, and they're hoping to crowdsource the purchase of new ones.

The buzz that surrounded the Hospira advisory this year might have done more to attract new researchers to the field than anything Rios could do. Kevin Fu, a professor of engineering who oversees the Archimedes Research Center for Medical Device Security at the University of Michigan, has been investigating medical device security for more than a decade, and he's never seen as much interest in the field as he's noticed this year. "Every day I hear of another name I hadn't heard before, somebody who hadn't been doing anything with medical devices," Fu says. "And out of the blue, they find some problems."

On a sunny fall day in Half Moon Bay, Rios grabs an iced coffee at a Starbucks in the city center. He's fresh off a week of work in Oklahoma—one of those assignments he can't talk about—and he's looking forward to some family time. Maybe in a spare moment, he'll grab one of the devices in his office and see what flaws he can find inside it.

One of those machines is exerting a powerful pull on him, as if begging to be hacked. After he was released from the hospital last year, he surfed around online and found the same CareFusion pump that had been tethered to him for two weeks. It now sits near a filing cabinet in his office.

"It's next," Rios says. Ⓑ

RAVELO

The Superstar Lawyer

"Love gives you rose-colored glasses"

Channeled business to his "company"

FELIZ

The Drug-Running Husband

RUST

THE SCANDAL UNDOING THE LARGEST ANTITRUST CLASS ACTION EVER

"One worst-case scenario could be that there was a romantic relationship"

"I loved the client. I believed we were right."

Met

representing

her

future

husband

FRIEDMAN

Sued and settled for $5.7 billion

The Opposing Counsel

RECK

BY PAUL M. BARRETT

"IT WAS HORRIFIC.

Keila Ravelo and her husband, Melvin Feliz, were asleep in their prairie-style home in Englewood Cliffs, N.J., three days before Christmas 2014 when 20 federal agents charged through the front door, guns drawn. The show of force met no resistance. Ravelo and Feliz submitted to being handcuffed and were driven away in unmarked sedans.

Ravelo, 50, had never been arrested before. A partner with the elite New York corporate law firm Willkie Farr & Gallagher, she'd built a successful career as a litigator, primarily representing MasterCard against waves of price-fixing lawsuits filed by retailers. In one credit card case, she helped negotiate a $5.7 billion truce—the largest settlement of an antitrust class action in the world. Earning more than $2 million a year, she favored Hermès handbags and diamond jewelry. She owned a Bentley Continental Flying Spur sedan and sent her teenage sons to a high-priced boarding school in Florida. Feliz, 49, had a varied past that included stints in real estate, paralegal work, and narcotics trafficking.

Husband and wife were taken to federal court in Newark and formally charged with a series of peculiar felonies. Prosecutors alleged that for years Ravelo and Feliz had ripped off her law firm and MasterCard in an $8 million scheme whereby Feliz provided phony back-office services. The crimes carry potential prison terms of more than 10 years. And there was another surprise.

After federal prosecutors subpoenaed Willkie, looking for evidence of the phony-vendor scheme, Ravelo's colleagues went through her e-mails and discovered she'd been secretly and inappropriately communicating with the enemy: a plaintiffs' lawyer named Gary Friedman who was suing MasterCard and other major credit card companies on behalf of thousands of retail stores. Concerned about conflicts of interest, Ravelo's firm decided to disclose the communication publicly. By mid-2015 the Friedman-Ravelo e-mails threatened to undermine the $5.7 billion settlement against MasterCard and Visa. In August a federal judge in Brooklyn, N.Y., rejected a parallel settlement involving American Express, citing the e-mails to Ravelo, at least two of which Friedman marked "Burn after reading."

It turns out that Ravelo and Friedman had known each other for a quarter century—since they met as young attorneys representing none other than Melvin Feliz, who'd been convicted on cocaine charges. Ravelo fell for her client, a fellow immigrant from the Dominican Republic who convinced her he'd change his ways. Feliz declined via an attorney to comment. In an exclusive interview, Ravelo says she was fooled long ago, and is now paying the price. "Love," she says, with resignation in her voice, "gives you rose-colored glasses."

Ravelo's story has a can't-make-this-stuff-up quality: She rose from working-class beginnings in the Caribbean, put herself through law school at Columbia, and reached the highest level of the legal profession, only to get tripped up by scandal. The tale illustrates the strange vicissitudes of greed (prosecutors' version), the power of romance to cloud common sense (Ravelo's version), or some combination of the two (perhaps the most likely version). "I still can't believe how it all unfolded," says Friedman, who now has career troubles of his own.

Beyond its personal dimensions, the account pulls back the curtain on mass litigation, a process with more line-blurring than is typically revealed in court. Defending herself against criminal fraud charges, of which she says she's not guilty, Ravelo unmistakably threatens to implicate other lawyers in what she says are the seamy aspects of class-action settlement negotiations. "If I have to show the ugly side to prove my defense," she says, "that's what I'll do."

Small in stature, Ravelo has large eyes and a gleaming white smile. Former colleagues and opponents, many of whom demanded anonymity because of the controversy engulfing her, describe her as a feisty attorney who scuffled over issues large and small. No one doubted her fealty to clients; her competitiveness with fellow attorneys, however, frequently exceeded her congeniality.

Growing up in the Dominican capital of Santo Domingo, Ravelo attended private schools, even though she says her parents struggled to house and feed their five children. Around age 11 she gained fluency in English during an 18-month stay with relatives in New York City. She returned to New York at 17, determined to attend college in the U.S.

Ravelo worked as a supermarket cashier, saved money while applying for a green card, and eventually enrolled at Upsala College, a now-defunct liberal arts school in northern New Jersey. She played on the volleyball team and studied hard. Her ambition and intelligence carried her to law school at Columbia, from which she graduated in 1991. She went straight to work in the New York office of Sidley Austin, a prestigious Chicago-based corporate firm. Ravelo recounts her progression with understandable pride. Unlike some of her legal contemporaries, she says, "nothing was handed to me."

At Sidley, she met Friedman, a more senior associate, while handling a pro bono case on behalf of three convicted Dominican American cocaine dealers. The trio, small-time street sellers, claimed in a civil suit against the federal government that they'd suffered severe beatings by U.S. Drug Enforcement Administration agents. "Gary latched onto me because of the shared Dominican background and my Spanish-language skills," Ravelo says. "He liked my energy"—an assessment Friedman confirms. Sitting at the civil trial as "second chair" for the plaintiffs, she grew enamored of Feliz. "We both had family in the Bronx," she says. "He felt like family."

Feliz came from a middle-class Dominican clan; for high school, his parents had sent him to the Valley Forge Military

THIS IS NOT THE SORT OF THING YOU SEE AT BIG CORPORATE LAW FIRMS”

Academy in Pennsylvania. He told Ravelo he got caught up in drug dealing as a 19-year-old and regretted it, she says. “I was putting a picture together in my head, and I believed it–that the crime is not what defined him.” A New York jury didn’t buy the civil suit against the DEA, and Feliz headed off to prison on the cocaine charge.

During three years behind bars, Feliz obtained a community college degree and promised Ravelo he’d learned his lesson. In 1995 he got out, and they married. The following year they moved from the Bronx to tony Englewood Cliffs. Feliz, who’d become something of a jailhouse lawyer helping other inmates with their appeals, took a job with Friedman as a paralegal. “He worked hard and had big goals to start a business of his own,” says Friedman, who’d formed a small private practice. Friedman and his wife, a law professor in New York, socialized with Feliz and Ravelo. “We loved Mel and Keila,” he says.

Ravelo’s legal career took off as she moved from Sidley to another well-established firm, Rogers & Wells, where she won a coveted partnership based not on her courtroom genius but her tireless management of behind-the-scenes discovery, according to several lawyers familiar with her work. Like most large-firm litigators, she rarely appeared before juries or even argued motions to judges. Instead, she took and defended pretrial depositions and wrangled over voluminous document exchanges. She earned a reputation not only for meticulously preparing “depo” witnesses but also for jousting tenaciously over even the most peripheral procedural matters.

Ravelo didn’t include her husband in socializing related to work, with the exception of the Friedmans. “His past was going to be a problem with my colleagues,” she says. “While I was able to figure out he was a good guy, I didn’t think that other people in my professional world would be able to avoid being judgmental and critical.”

She’s probably correct. In the late 1990s, Feliz went back to prison for eight months on a perjury conviction related to his testimony during the civil suit against the DEA. “It was horrific,” Ravelo recalls. “This is not the sort of thing you see at big corporate law firms.”

For her part, Ravelo flourished, largely because of her antitrust work for MasterCard, a company besieged by allegations it conspired with banks that issue cards and rival card networks to fix interchange fees, also known as swipe fees, that are charged to merchants for the privilege of using plastic. Overlapping suits filed by thousands of large and small retailers also alleged that the card networks and banks unlawfully prevented retailers from using surcharges to discourage consumers from using more expensive cards.

Ravelo says her loyalty to MasterCard went beyond legalities: “I loved the client. I believed we were right. I lived it day and night.” She became a regular presence at MasterCard’s headquarters in Purchase, N.Y., and a confidante of the company’s top in-house lawyer, Noah Hanft, who controlled tens of millions of dollars in annual legal spending. (Hanft declined to comment.)

In 2005 the Richmond (Va.)-based firm of Hunton & Williams recruited Ravelo to join a growing antitrust department, and, in a reflection of her growing influence, she brought MasterCard along as a client. At this point, with Feliz about five years out of prison, Ravelo says her husband’s career interests began to intersect with her own. Feliz and his brother and sister-in-law had started a small document-copying business catering to lawyers, she says. As digital-document management replaced the reproduction and storage of physical paperwork, Feliz saw an opportunity to expand into the e-document marketplace. “I could help him jump-start that business because of my role in big-time cases,” Ravelo says.

It didn’t occur to her, she adds, that it might be considered inappropriate self-dealing for her to steer MasterCard-related document work to her husband’s nascent company. “At the big law firms, we did favors all the time for clients, arranging summer jobs for their relatives, that kind of thing,” Ravelo says. “I didn’t see any problem with helping Mel.”

Ravelo and Feliz lived large in Englewood Cliffs, an exclusive enclave north of the George Washington Bridge above the Palisades on the Hudson River. In 2006 they paid almost $2.4 million for the spacious house and manicured yard. In October 2010, Willkie announced it had recruited Ravelo away from Hunton & Williams and was also bringing over several more-junior attorneys who worked with her on the MasterCard litigation.

The move to Willkie represented another step up in terms of prestige. With roots in the late 19th century, the law firm has forgone the industry trend toward gigantism in favor of partner profitability. It has 650 lawyers in nine offices in six countries and represents a wide spectrum of businesses, including Bloomberg LP, owner of this magazine. In 2014, Willkie had revenue of $640 million, ranking 64th in *American Lawyer*’s Global 100 list and representing an impressive 14.5 percent gain from 2013. In terms of average annual profit per partner, Willkie came in 15th, with $2.6 million.

In addition to the standard law firm news release, Ravelo’s joining Willkie merited coverage in the legal trade press. “Two weeks into the job,” the newsletter Legal Bisnow reported, she “tells us that having a Buddha on her shelf reminds her to keep calm, take a deep breath, and focus inside.”

Ravelo continued to show interest in at least certain outward attachments. In the wake of the real estate crash in South Florida, she and Feliz invested $1.6 million in 2010 to buy two waterside condos in Miami, which they intended to flip for a gain, according to the *Real Deal*, a real estate publication. In November 2013, Ravelo found time to pose for New Jersey social and celebrity publication *(201) Magazine*. The caption described her as wearing diamond jewelry from Mary Tacorian, a belted Max Mara dress, and Manolo Blahnik pumps while carrying an Hermès handbag from Paris. “I don’t chase trends,” she told the site. “I like classic styles.”

The same year, NBC News in New York included Ravelo in a segment on parents who spend heavily on their kids’ sports aspirations. The television network estimated that she and

PREVIOUS SPREAD: RAVELO: NORTH JERSEY MEDIA GROUP; THIS SPREAD: NORTH JERSEY MEDIA GROUP

Feliz spent $70,000 a year on each of their two sons, who attended a baseball boarding school in Florida run by the talent agency IMG. The parents also bought a house in Bradenton near the IMG Academy. "It's a lot. It's a big sacrifice," Ravelo told NBC.

Politically, Ravelo leans left. She served on the board of the National Center for Law and Economic Justice, a New York group that helps low-income families. From 2008 to 2014 she donated more than $500,000 to Democratic candidates and causes, according to Sunlight Foundation, which tracks political contributions. As a black woman, Ravelo remained a rarity at the upper elevations of corporate law. The June 2014 issue of *American Lawyer*—sporting the cover language "What's Wrong With This Picture?"—featured her as one of only three black partners out of 131 attorneys recognized by the periodical's "Big Deals" and "Big Suits" columns over the previous year. On a more upbeat note, the October 2014 edition of *Profiles in Diversity Journal* included a photo of Ravelo with her arm around a smiling Michelle Obama.

Feliz, meanwhile, was augmenting his document-management business with other pursuits. According to court documents, the DEA received a tip in October 2012 that he and two other men planned to buy 20 kilos of cocaine for $550,000, truck the haul from California to New Jersey, and sell it on the East Coast. On Oct. 22, agents observed Feliz drive up to his Englewood Cliffs house in a black Porsche Cayenne and transfer a satchel of cash from the rear hatch to the car of one of his confederates, who drove to a nearby restaurant and unwittingly delivered it to a DEA informant posing as a courier. The informant transported the money to Los Angeles, where he turned it over to Feliz's accomplice, at which point the conspirators were arrested and charged with conspiracy to possess with intent to distribute cocaine.

Curious about where the $550,000 in front money had come from, the DEA brought in the IRS, and together the agencies came across the family-run document-services operation, which did business under the names E-Lit and Litigation Solutions. The IRS alleged that Feliz started the supposed vendors in 2008 and had a cousin open a bank account for the businesses in Las Vegas. In New York, Feliz maintained a business address at 110 Wall St. that was little more than a mail drop.

From 2008 through mid-2010, Feliz collected payments from Hunton & Williams, and thereafter from Willkie, investigators concluded. The payments were tied to scut work supposedly done for MasterCard: digitizing and indexing paper documents, burning CDs, and the like. Ravelo allegedly approved most of the outlays.

She says in the interview that as far as she knew, Litigation Solutions "was real. I didn't want to be involved in the day-to-day operation, but Mel was. I said I would make the referral to my people [at Hunton & Williams and later, Willkie] to try them out."

At that point in the conversation, Ravelo's criminal defense attorney, Steve Sadow, interrupts, saying: "That's far enough for now."

According to the criminal complaint that led to Ravelo's and Feliz's arrests the morning of Dec. 22, 2014, the couple operated the phony vendors jointly and did little or no real work for either of Ravelo's law firms or MasterCard. Prosecutors alleged that the two funneled most of the fraudulently obtained funds into a joint bank account used to pay personal expenses, including "$250,000 in payments to a jewelry store."

A subpoena from federal prosecutors landed at Willkie's midtown Manhattan headquarters in November 2014. Within days the law firm asked Ravelo to resign and launched an internal investigation into what she'd been up to with her husband. Willkie, its spokeswoman, and its outside attorney didn't respond to multiple requests for comment.

In early February 2015, Feliz pleaded guilty to the cross-country drug conspiracy, and a few days later, Willkie went public with

ANOTHER PART OF THE SETTLEMENT—ONE THAT CUSTOMERS WOULD FEEL—

what it had discovered during its internal probe of Ravelo. The law firm disclosed that her old friend Friedman had sent Ravelo a stream of e-mail over the years, some of which concerned mundane personal matters like joint family vacations.

But some of the e-mail revealed confidential information belonging to merchants Friedman represented who were suing Ravelo's client, MasterCard, as well as its rivals Visa and American Express. This mattered because a decade of hard-fought litigation had only recently come to a head in interlocking settlements, one involving MasterCard and Visa, and the other, American Express. The MasterCard/Visa pact, preliminarily approved by a federal judge in 2012, provided for $7.25 billion in damages. Major chain stores such as Wal-Mart, Target, and Home Depot were dissatisfied with the settlement, especially with the future liability protection it provided to the card companies, so they dropped out of the case. These "opt-outs" reduced the value of the pact to $5.7 billion. Another part of the MasterCard/Visa settlement—one that customers would feel—allowed merchants to impose surcharges on shoppers paying with credit cards as a way to recoup swipe fees. A "level playing field" provision required any surcharges be consistent for all cards, a rule imposed by the AmEx settlement as well.

The large retailers that had objected seized on the Friedman-Ravelo back-channel communication as another reason the settlements ought to be blown up and litigation reinitiated. Lawyers for the major chains had long contended that attorneys for the settling class of smaller merchants had suspiciously sold out for too little. Now, they added that perhaps the relationship between Friedman and Ravelo explained why and how the supposed sellout had occurred.

At a freewheeling hearing in federal court in Brooklyn on Feb. 26, Steig Olson, an attorney for Home Depot, suggested that "one worst-case scenario could be that there was a romantic relationship" between Friedman and Ravelo, which compromised their respective clients' interests. "Ms. Ravelo's husband has been indicted not only for the scheme that was mentioned here"—the phony-vendor caper—"but for being a narcotics trafficker," Olson added. "We don't know if that had anything to do with this."

Samuel Issacharoff, a professor at New York University Law School who represented Friedman, refuted Olson's unsubstantiated suggestions. "This is a long-standing friendship," Issacharoff said. "The families know each other. The kids know each other." He decried what he called "promiscuous character insinuation."

In separate interviews, Friedman and Ravelo deny any romantic tie. Friedman hasn't been implicated in the criminal allegations against Ravelo and her husband.

In a written statement, Friedman characterized his communications with Ravelo as routine back-and-forth intended to test out his legal theories. "I acted as I did based upon a verifiably accurate assessment that our communications would benefit [my clients]," Friedman said. "My internal compass is guided entirely by class member interests.... This work entailed no shortage of sidebars, and it required relationships of trust between individual lawyers in opposing camps."

U.S. District Judge Nicholas Garaufis took a darker view. In August 2015 he rejected the AmEx settlement that permitted merchants to impose a surcharge on customers who use American Express cards as long as the same surcharge applies to consumers using other cards. Garaufis expressed outrage over Friedman's contacts with Ravelo. (The rejected AmEx settlement would have generated $75 million in fees for Friedman and other plaintiffs' attorneys, but no money damages for their clients.) The judge noted that Friedman had shown Ravelo large swathes of his confidential case file, including strategy memos drafted by plaintiffs' lawyers. "Whatever his reason for doing so," Garaufis wrote, "Friedman's bringing MasterCard's counsel into the negotiating process created a conflict between class members and class counsel, and specifically a risk that Friedman, with Ravelo in his ear, negotiated settlement terms that are worse for class members than the terms he might have negotiated absent that conflict." (Friedman, who disputes Garaufis at every turn, now faces potential civil sanctions for violating a judicial order.)

ALLOWED MERCHANTS TO IMPOSE SURCHARGES ON SHOPPERS PAYING WITH CREDIT CARDS TO RECOUP SWIPE FEES

If the Friedman-Ravelo chatter doomed the AmEx pact, the objecting giant retail chains argued, it ought to have the same effect on the MasterCard/Visa settlement. In trying to salvage the latter deal, Willkie and MasterCard's other lead law firm, Paul, Weiss, Rifkind, Wharton & Garrison, have tried to play down Ravelo's role. The law firms have said in court filings that while Ravelo led Willkie's MasterCard team, Paul Weiss attorneys set overall strategy and argued key motions in court.

"That is ridiculous," Ravelo says. "I was in every meeting, I was on every conference call, and I sat at counsel table in court."

What's more, Ravelo says that while helping craft MasterCard's strategy, she relied on Friedman's revelations of confidential plaintiffs' information. "When advising MasterCard and communicating with co-counsel…including regarding the negotiation and finalization of the settlement and in connection with mediation sessions, I drew upon all the information in my possession that affected MasterCard's interests, including the information I was provided by Gary Friedman," Ravelo said in a sworn declaration dated Sept. 1. In other words, she claims she used confidences revealed to her by Friedman to try to get a better deal for MasterCard.

If her account is true, the $5.7 billion settlement seems doomed: The plaintiff-retailers' interests were revealed to—and used against them by—a longtime antagonist. The two Willkie partners who worked most closely with Ravelo—Wesley Powell and Matthew Freimuth—didn't respond to e-mails and phone calls seeking comment. They haven't been accused of wrongdoing. Spokesmen for MasterCard likewise didn't respond. A person designated to speak for the credit card legal team, but only on the condition of anonymity, calls Ravelo's assertions false. The negotiations and settlement were proper in all respects but for the behavior of Ravelo and Friedman, this person says.

On Aug. 25, Feliz complicated Ravelo's position by pleading guilty to conspiracy to commit fraud and tax evasion in the faux-vendor case. Feliz, who remains incarcerated, awaits sentencing on the fraud and cross-country cocaine charges. Under his pair of plea deals, he faces 14 years in federal prison. According to Ravelo, Feliz deceived her for more than a decade. Unbeknown to her, she says, he even maintained a secret second family. Ravelo's attorney, Sadow, wrote in a press release that Ravelo wasn't a willing accomplice but "acted as Feliz coercively demanded—not freely, voluntarily, or with criminal intent." Feliz, according to Sadow, "caved to the intense and overwhelming government pressure to implicate Ms. Ravelo." In an interview, the attorney acknowledges that Ravelo generally is a strong-willed person but says she nevertheless succumbed to "emotional and mental" pressure from her now-estranged husband.

If the coercion defense doesn't work, Ravelo and Sadow threaten to try a more explosive strategy to foster reasonable doubt about the vendor-fraud case. It's a long shot but one that could cast unfavorable light on the world of class-action settlement negotiations.

Ravelo suggests she could become a witness in an investigation into whether the MasterCard/Visa settlement talks included unsavory and possibly illegal conduct entirely separate from the fake-vendor business. She says, for example, that she and other credit card lawyers and a court-appointed mediator employed what they called a cram-down strategy, playing stores off each other—smaller stores that cared a great deal about the amount of the swipe-fee recovery vs. pharmacy chains that cared less because they were large enough to negotiate independent terms with the card networks. The defendants worked out a deal with the drugstore chains and then "crammed it down" on the rest of the class on a take-it-or-leave-it basis, Ravelo says.

Although class-action defendants routinely try to divide and conquer groups of plaintiffs, proof of a cram-down, as Ravelo describes it, might raise new questions about the fairness of the $5.7 billion settlement. The person familiar with the credit card legal team confirms that something approximating a cram-down strategy came into play but says no retailers were exploited. The federal judge supervising the process was well aware of how the negotiations unfolded, this person adds.

On another issue, Ravelo says she's ready to provide evidence that MasterCard and Visa allegedly used private joint defense-strategy sessions to engage in fresh collusion on rates charged to retailers. She says some plaintiffs' lawyers became aware of this alleged collusive activity, but defense lawyers talked them out of publicizing it in the interest of reaching a large settlement.

Of the fresh collusion allegations, the person designated to speak for the credit card legal team says the judge approved of the defendants working together. Indeed, in a brief order issued on May 20, 2011, U.S. Magistrate Judge James Orenstein brushed aside suggestions by certain plaintiffs that defendants colluded illegally on rates as part of their strategy sessions.

Would federal prosecutors delve into this issue, relying on Ravelo as their turncoat witness? A spokesman for the U.S. Department of Justice declines to comment. Negotiations over a potential criminal plea deal that would reduce Ravelo's prison term to the realm of several years so far haven't borne fruit. On Nov. 5 a federal grand jury indicted Ravelo on fraud and tax-evasion charges related to the phony-vendor scheme. Under the indictment, Ravelo faces up to 25 years in prison.

If Ravelo does go to trial, she threatens to expose other damning practices in high-stakes litigation. The collateral damage to former clients and colleagues appears to be of little concern to her as the likely-to-be-disbarred attorney seeks to avoid a future behind bars. "People don't know the whole story," she says. "I'll tell it because I have to—my life and my children's lives depend on it." B

Faux-Rock

By Esmé E. Deprez

Walltopia's Ivaylo Penchev climbs in Sofia

Stars

Photographs by Guy Martin

As indoor rock climbing booms, two guys from Bulgaria have become the world leaders in putting up walls

The Bulgarian village of Letnitsa (population 2,547) is a cluster of red-roof-tiled homes in a rural stretch of countryside in the Danube River valley, between the Balkan Mountains and the Romanian border. It's a two-and-a-half-hour drive east from Sofia along a two-lane highway lined with monotone Soviet-era apartment buildings and sunflower fields. As the poorest and most corrupt member of the European Union, Bulgaria is still struggling to shed its communist past as it transitions to a market economy. A small town here is an unlikely place to manufacture walls for that most First World of sports: indoor rock climbing.

"I tend to consider myself as more clever than the others," says Ivaylo Penchev, before leading a tour of his factory, on Letnitsa's western edge. He and Metin Musov founded Walltopia in 1998 and have since turned it into the largest builder of climbing walls in the world. They've assembled more than 2.5 million square feet of them in more than 50 countries. That's enough to cover all of the office space in the Empire State Building. They've surpassed older, more established companies riding the surge in interest in climbing by taking advantage of Bulgaria's cheap labor and Penchev's ego.

"All the time, I knew that we will succeed," he says, circling a crew of 12 workers who are applying fiberglass to a 38-foot-long stretch of plywood ribbing. Resting on a support of rusty metal pipes, it will become a climbing structure bound for a gym in Wichita. "It was a matter of building a few climbing gyms, having people feel happy afterward, and then they would spread the word."

Penchev, 45, had pulled up moments earlier in his immaculate 2014 silver S-Class Mercedes, just shy of 12:30 p.m., when a buzzer signaled the end of lunch. Dozens of men in blue overalls and sweat-stained T-shirts stamped out their cigarettes and went inside to weld together long, square-shaped ducts, then cut thin birch panels and smother them in layers of glue and quartz sand.

When Penchev was here earlier in the summer, he was in disguise for the Eastern European version of *Undercover Boss*, hiding behind a brown wig, spectacles, and a bushy mustache. "I looked like a getting-old redneck rocker-loser type," Penchev recalls. "People were very supportive, and they were convincing me that I am quite good in what I am doing. Obviously everyone is watching too much American movies, and political correctness spreads out even on the Balkan Peninsula."

As they walk the factory floor, Penchev

Penchev at Boulderland, Walltopia's Sofia gym

and Musov crack jokes in Bulgarian amid the clamor of power tools and the stench of polyester resin, marveling at their latest creations, headed for Austria, Russia, and Dubai.

The pair, who met in high school while climbing at their local crag, both grew up poor before the collapse of communism. Musov never went to college; Penchev says he didn't eat in restaurants until his mid-20s. Musov, who has a mop of unruly brown hair and short, bowed legs, now oversees the 250-worker factory in Letnitsa. He drives a white BMW X6. Penchev, who speaks English and Russian in addition to Bulgarian, spends as much time flying around the world for meetings as he does at the company's headquarters in Sofia. He recently added an arrest-me-red Lamborghini to his car collection. On this humid September afternoon, he sports a casual, big-city polish: jeans, Adidas sneakers, and a fitted, pale pink polo. His head shines—he's shaved it bare every morning since he started going bald almost two decades ago—and his hands are soft. The trademark calluses of the climber he once was were lost long ago to typing on a laptop and glad-handing.

Walltopia, which employs about 650 people, is building two factories that will double its capacity. New capital from a first round of outside investment has valued the company at $70 million. Walltopia agreed this month to take a stake in Momentum, a small climbing gym chain out of Salt Lake City, to help it expand nationwide. "It's very smart for them to be on both sides of this business: making the walls as the supplier but also profiting in getting people into the gyms," says Peter Mortimer, a climber and filmmaker. "They're going to help grow the industry, and they're going to profit from it. It's like Budweiser opening a bar."

On a trip to China last year, Penchev struck a deal to build as many as 50 climbing structures over the next five years. "Asia is booming," he says. "It's the future—so vivid, so alive." But the U.S. remains the company's most important market, where climbing gyms are opening almost every week. Of the 43 new gyms in 2015, Walltopia is behind 13. Climbing gyms will total almost 400 by 2015's end, up 11 percent from the previous year, according to the *Climbing Business Journal*. Demand could support a thousand more, Penchev says.

Few are as high-profile as Sender One, in Santa Ana, Calif., which is joining with Walltopia to open its second location next year in Los Angeles. Sender One is co-owned by Chris Sharma, a climbing icon who was among the first generation of climbers to get their start in gyms. For Walltopia it's like building golf courses with Rory McIlroy—they're re-creating the arches and cracks and overhangs that Sharma's scaled around the globe.

"Our industry is at the end of infancy and the beginning of puberty, but as we know, the main activity in that period is masturbation," Penchev says. "For some, the real sex is close, or maybe even started. But the real orgy is about to come."

Rock climbers used to be self-described dirt-bags, living out of their cars, traveling in search of the perfect crag, but now the sport has gone mass market, attracting weekend warriors from New York to Los Angeles. In January, when Tommy Caldwell and Kevin Jorgeson ascended a smooth 3,000-foot sea of vertical granite in Yosemite National Park, the *New York Times* chronicled what felt like every fingertip hold.

In the 1970s climbers were countercultural outlaws; now a professional can earn a six-figure salary and travel the globe on the dime of sponsors like Adidas. The story of climbing's rise is entwined with the boom in indoor gyms, which offer beginners—"gumbies"—a relatively controlled environment in which to leave the ground. And central to the story of gyms is the evolution of their artificial walls, whose cost can range from $150,000 to more than $1 million.

Rock walls used to be constructed entirely on site, with steel bones that had to be welded, covered in plywood, and overlaid by hand with concrete. Each wall, a lumpy, dark knockoff of real rock, took months to make. For 25 years or so following the opening of the first commercial climbing gym in 1987, in Seattle, that was OK. The main builders and users of these facilities were enthusiasts looking for a place to train when bad weather kept them from venturing outside. They were "small underground s---holes," in Penchev's telling.

The walls in today's airy gyms form a modern tableau of bright colors, with combinations of flat panels, sharp angles, and wavy 3D curves. Popularized by Walltopia, this aesthetic has become the new standard.

"We call it the money shot," Jeff Pedersen says. "When you walk into a gym, how amazing does it look? Is it inspiring? Does it make you want to go tell 10 of your friends?" Pedersen, a climber, founded Utah's Momentum gym chain in 2007. "That sense of excitement and color and brightness and wonder in your facility with these Walltopia products would have been impossible with hand-troweling concrete onto your wall."

Walltopia prefabricates the panels in Letnitsa, packs the components into shipping containers, and sends a crew of burly Bulgarian men to assemble the pieces like an Erector set at their destination. Because the walls can be dismantled and reused, banks accept them as collateral. The company's team of 70 architects and engineers designs each wall to fit the client's vision.

Gym owners say the new style makes it easier to maximize wall space, allows for better route-setting, and is cheaper to maintain. But the industry's growth is about more than just walls. More and more gyms are adding amenities such as yoga, Wi-Fi, juice bars, and retail to keep people coming back. And they're now able to attract a following of climbers in places far from any core scene. Pat Enright left a career in finance in 2003 to open MetroRock in Boston. "In 2003 the concept of opening a climbing gym in order to make profits for an investor was a foreign concept," says Enright, who's building his fourth gym, in Brooklyn, N.Y. Promising investors a 20 percent return, he's been approached by buyout firms. "Climbing gyms produce something which most exercise companies or facilities do not," he says. "They have a culture."

Penchev describes himself as a serial entre-preneur driven by anxiety and a desire to overcompensate for reasons both physical—he stands just shy of 5 feet

7 inches—and cultural. “Bulgaria was ruled by the Ottoman Empire for 500 years,” he says. “We were deprived of most of our rights, so we lived like slaves. So this is not in our genes but in part of our culture: to accept being inferior.”

Penchev was studying for a master’s degree in theoretical physics when he quit to start the company, and he’s as comfortable discussing the intricacies of a pulley system with engineers as he is weighing the potential of a new Russian gym with investors. He tells colleagues in meetings that they’re “idiots” who should “go back to kindergarten,” and posts signs throughout headquarters exhorting employees to work like *kucheta*, which is Bulgarian for “dogs.” Patent is a dirty word: “I don’t want to make business putting barriers in front of the others,” Penchev says. Workers are fined the equivalent of $5 if they arrive even one second past 8 a.m. more than twice a month.

Yet he has a devoted workforce. Earlier this year, Boryana Levterova left her job in Toronto advising Fortune 500 companies for Boston Consulting Group to become his assistant. He prefers to promote from within: Levterova just took over the rollout of Walltopia’s newest product line, the Rollglider. It’s like a metal zip line that can snake through trees, or even around a mall; riders speed down it hanging in a harness.

Penchev gives associates time and freedom to develop products, and then a financial stake. Employees have come up with rope courses (Ropetopia) and cave installations for fake spelunking (Rocktopia). The company also owns and operates a gym in Sofia to test and show off products. Altogether, the Walltopia Group says it will post $26 million in revenue in 2015 and make a profit of $7.5 million.

In the mid-’90s, when Musov first had the idea for Walltopia, a 13-year-old French company named Entre-Prises led the global market for climbing walls with an early version of small, prefabricated panels. Using a windfall Penchev had earned co-founding a plastic bag company, he and Musov expanded on the French concept and automated much of the manufacturing process, investing in computerized cutting machines that eliminated some labor costs. They developed a wall coating that repels black marks otherwise left by the sticky rubber-soled shoes climbers wear to give them traction. And they kept all production in Bulgaria, which has the cheapest labor costs in the EU. They also benefit from corporate and personal income taxes held flat at 10 percent.

By 2005, Walltopia had become a dominant brand in Europe, but Penchev still hadn’t cracked the U.S., a fragmented market where manufacturers including Rockwerx in Massachusetts and Eldorado in Colorado competed with local, independent crews to build walls for the handful of gyms opening each year. “Americans thought Bulgaria was the end of the world,” Penchev says. “We might as well have been based in Mozambique or Angola.”

Momentum’s Pedersen became Walltopia’s first American client after meeting Penchev at a Salt Lake City convention for outdoor-goods retailers in 2005. Pedersen had been unable to find a wallmaker willing to alter its manufacturing processes to replicate his vision. “I remember getting that cold shoulder from the other companies, and walking down the aisle and seeing this guy who’s bald like me, short like me, and dressed in a funny white suit,” Pedersen recalls of Penchev. “He was very proud of his product, which was mostly triangles and very interesting geometric shapes. We didn’t want that—we wanted smooth curves. But immediately I could tell he was open to new ideas.”

It didn’t start well. First, Walltopia sent over the wrong panels; then shipping containers got held up in customs, delaying the gym’s opening by months. Pedersen grew frustrated. “But there was never any finger-pointing, there was only problem-solving,” he says. “If they don’t have the current technology to do it, they’ll invent the technology. That’s what I love about Walltopia. I just don’t see any other company out there thinking that way.” Momentum, which has worked exclusively with Walltopia since, opened its second and third gyms last year.

To woo Sharma and his Sender One co-owner Wesley Chu, Walltopia flew them business class to tour the factory in Letnitsa, work one-on-one with designers, and drink *rakija* (a brandylike Bulgarian specialty) to excess in Sofia nightclubs with Penchev. “The sense we get from Walltopia is that they want to win,” Chu says.

In addition to investing in gym chains, Penchev sees growth in acquiring competing manufacturers. He and Musov already own two-thirds of Composite X, also in Letnitsa, which makes the holds climbers use to hang on to walls and recently introduced translucent versions for one of Penchev’s latest innovations, a wall embedded with LED lights. He’s about to launch what he says may be the industry’s next big shift: a portfolio of standardized, mix-and-match wall parts that would eliminate the need to customize according to a facility’s size and shape, making it cheaper and faster to open a gym.

Penchev is also positioning Walltopia for a world beyond the boom in commercial climbing gyms, which drives about two-thirds of the company’s business. Some of the fastest-growing subsidiaries are more oriented toward amusement and entertainment, such as climbing-based activity parks for children. Called Funtopia, they’re already a hot seller in malls in Asia and the Middle East. Penchev now spends about a third of his time on his newest company unrelated to climbing, Auxionize. It’s an online auction site where suppliers of everything from office chairs to construction contracts compete to offer the lowest price.

The night before visiting the factory in September, Penchev takes a seat on the thick mats climbers use to break their falls in between climbs at Walltopia’s gym in Sofia. Filming the episode of *Undercover Boss* drove home what he cites as the company’s biggest stumble: It should have started building its two newest factories earlier. In Letnitsa, “people are exhausted, the factory never stops. We work at full capacity all the time,” he says. “But these are good problems. I do not complain.” B

A worker paints a steel skeleton in Letnitsa

BOOKS IN BAGS / THE ART WORLD'S OPENING BELL / WAG THE DOG / TRANS-PACIFIC TV

ETC

Chicks With Sticks

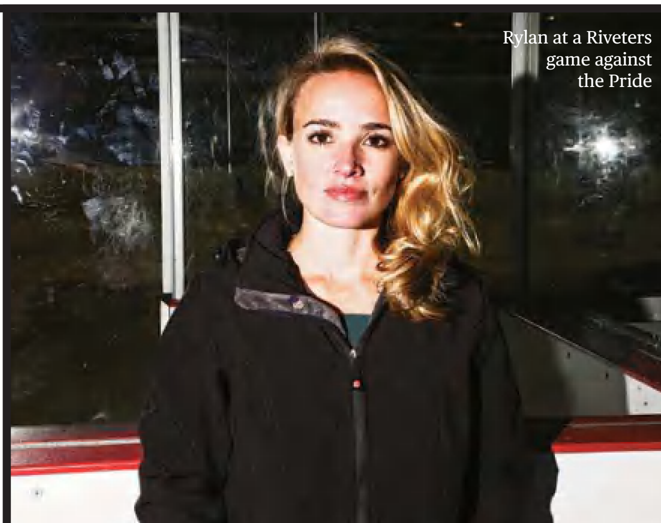
Can women build a hockey league from the ice up?
By Claire Suddath

Photographs by Amy Lombard

For athletes in a game that doesn't allow body checking, women's hockey players sure do slam into each other a lot. The New York Riveters are playing the second home game of their inaugural season, against the Connecticut Whale, at an ice rink in the outer reaches of Brooklyn, and the game clock can't tick more than a few seconds without someone flying at full speed into someone else—sometimes by accident, sometimes maybe not. Gloves are lost. At least one stick breaks. "You can't beat a game like this," says Mike Martorella, 42. He's wearing a Riveters jersey. "I paid $20 to sit in the front row and watch Olympic-level athletes play right in front of me."

The Riveters are the flagship team of the National Women's Hockey League, founded this year by Dani Rylan, a former Northeastern University hockey player who wants to make her league "as big as the NHL." Only about 700 people are watching this game—about half of whom are women—but they have the enthusiasm of at least twice that. "When we heard about these guys, we had to get season tickets," says Kristine Boniello, 30, smiling through bright red lipstick, her hair in pin curls and tied with a red bandanna just like the team's mascot, Rosie the Riveter. Boniello drove more than an hour from Long Island with her sister and some friends to watch the game. There are a few other Rosies in the crowd.

Before the NWHL started in October, there was no professional pipeline for women hockey players in the U.S. That's not to say women weren't playing hockey anywhere—they have been, since at least 1891, when some ladies gathered at an ice rink in Canada and an Ottawa newspaper wrote about the spectacle—but Americans were relegated to amateur leagues or to playing individually in men's leagues. When women's hockey


Rylan at a Riveters game against the Pride

"It was a challenge getting sponsors on board this first year, because they wanted tangible numbers that we just didn't have—butts in the seats, size of our following"


Young fans cheer on the Riveters

was added to the Winter Olympics in 1998, the American and Canadian teams recruited almost exclusively from collegiate and men's minor league teams.

"Unless you're good enough for the Olympics, your career basically ends with college," Rylan says. At 28, she has long blond hair and a smile so even and bright it's clear she's never taken a puck to the face. (An opposing player did skate over her forearm, though.) Rylan started playing hockey at age 5 in Tampa and continued through college. After she graduated in 2012 and moved to New York to open a coffee shop called Rise & Grind in East Harlem, she joined two amateur men's hockey leagues for fun.

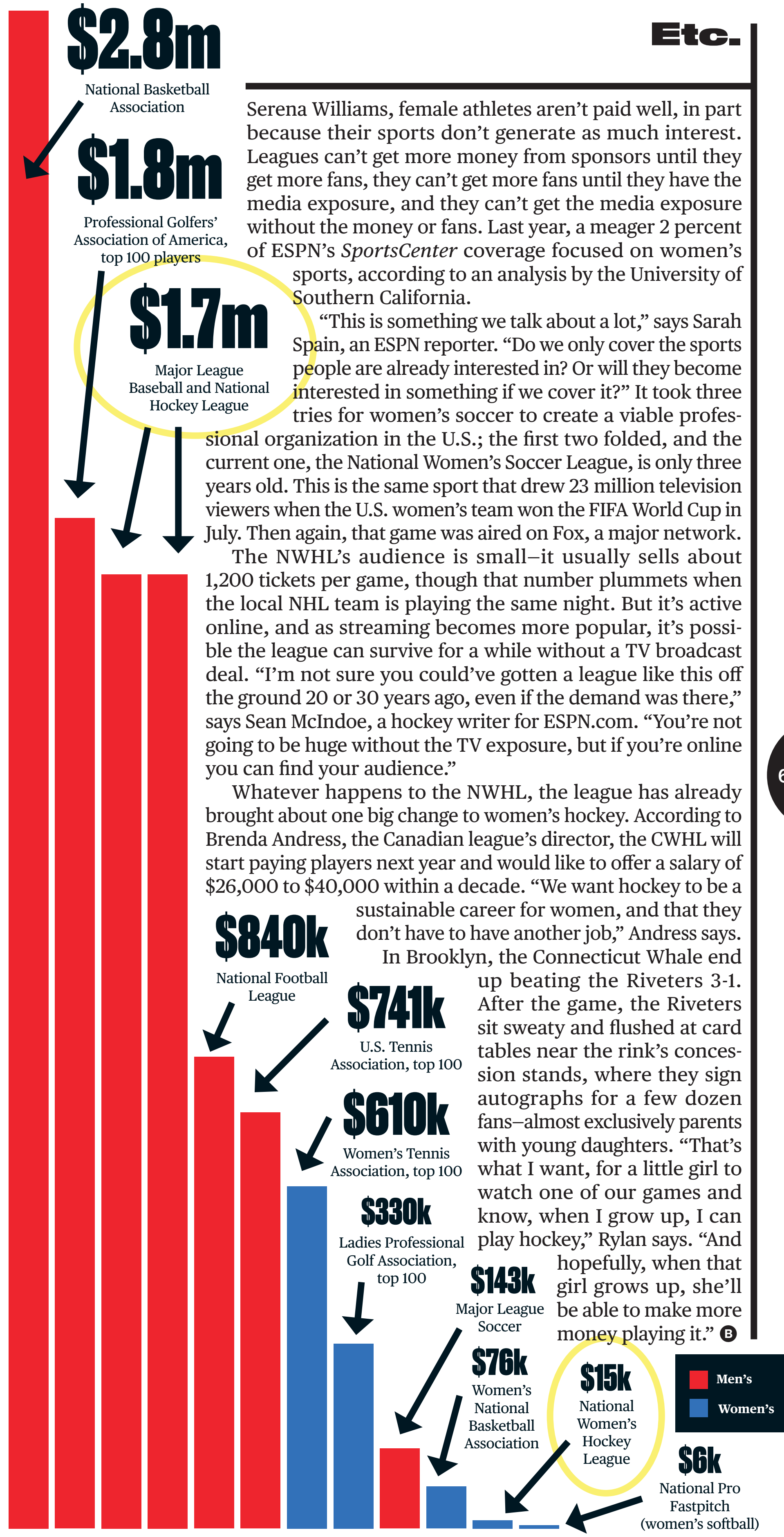
In February 2014, Rylan decided to form a New York team within the Canadian Women's Hockey League, the world's largest women's professional hockey league, with five teams. "I wanted to give women a way to play hockey after college and not have to hang their skates up," she says. Then she found out the league didn't pay players and made them buy their own equipment. So she scrapped that idea and founded her own league. Rylan says the NWHL is funded through private donations, the sources and amounts of which she won't discuss.

The NWHL began with four teams in cities that already have a lot of hockey fans: Boston, Buffalo, New York, and Stamford, Conn. It recruited athletes—including several Canadian league players and eight members of the U.S. Olympic team—by promising to pay them an average annual salary of $15,000, plus a percentage of their jersey sales. It's not a lot, but it's more than athletes earn in some other sports. Professional female soccer players in the U.S. make about that much, but according to a survey by the USA Track & Field Foundation, elite runners (male or female) who rank in the top 10 for their events usually make even less. Rylan decided on an 18-game season lasting

PHOTOGRAPHS BY AMY LOMBARD FOR BLOOMBERG BUSINESSWEEK

The Slippery Slope Of Athlete Pay

Median annual salaries for U.S. sports' most elite players



DATA: SPORTINGINTELLIGENCE.COM; WNBA; WNHL; ESPN

from October to February, which would allow women time for second careers. Players are lawyers, engineers, schoolteachers, and bakers. The most common job is, unsurprisingly, teaching hockey.

"It was a no-brainer, joining this league. I'm actually getting paid," says Brianna Decker, 24, a former Canadian league player who now plays for the Boston Pride. That is when she's not training full time on the U.S. women's national team for the 2018 Olympics or teaching private hockey lessons to young girls on the side. "I mean, I know I'm not going to be rich," Decker says. "But I don't play hockey to be rich."

To keep the NWHL viable, Rylan has kept its other costs as low as possible. She and a staff of nine (one of whom, her communications director, is also a player) work out of a co-working space in a graffiti-covered warehouse in Brooklyn. Games take place at local hockey rinks when the primary occupants aren't using them—the Pride play at Harvard University, for example. There's a grittiness to Rylan and her league that makes you want to root for them. When the Riveters' first home game was delayed an hour and a half because Boston's bus got stuck in traffic, Riveters forward Janine Weber entertained fans by juggling oranges.

But there's also a financial reality that can't be avoided: The NWHL is doling out more than $1.1 million in salaries this first year; to keep doing that, it's going to have to start generating revenue. That hasn't been easy. "It was a challenge getting sponsors on board this first year, because they wanted tangible numbers that we just didn't have—butts in the seats, size of our following," Rylan says. She's approached some of the NHL's sponsors and also companies that support "women's stuff," as she puts it, with no luck. She wouldn't say which ones—she's still in talks with some of them for next year. (Gatorade sponsors both the NHL and the WNBA but refused to specify what size a league would have to reach before it would be interested in a partnership.) Television networks were similarly uninterested in airing the games, which the NWHL has decided to stream and archive online instead. The problem, Rylan kept being told, is that there just aren't that many people interested in women's hockey.

This is the big issue for many women's sports. With the rare exception of, say, Serena Williams, female athletes aren't paid well, in part because their sports don't generate as much interest. Leagues can't get more money from sponsors until they get more fans, they can't get more fans until they have the media exposure, and they can't get the media exposure without the money or fans. Last year, a meager 2 percent of ESPN's *SportsCenter* coverage focused on women's sports, according to an analysis by the University of Southern California.

"This is something we talk about a lot," says Sarah Spain, an ESPN reporter. "Do we only cover the sports people are already interested in? Or will they become interested in something if we cover it?" It took three tries for women's soccer to create a viable professional organization in the U.S.; the first two folded, and the current one, the National Women's Soccer League, is only three years old. This is the same sport that drew 23 million television viewers when the U.S. women's team won the FIFA World Cup in July. Then again, that game was aired on Fox, a major network.

The NWHL's audience is small—it usually sells about 1,200 tickets per game, though that number plummets when the local NHL team is playing the same night. But it's active online, and as streaming becomes more popular, it's possible the league can survive for a while without a TV broadcast deal. "I'm not sure you could've gotten a league like this off the ground 20 or 30 years ago, even if the demand was there," says Sean McIndoe, a hockey writer for ESPN.com. "You're not going to be huge without the TV exposure, but if you're online you can find your audience."

Whatever happens to the NWHL, the league has already brought about one big change to women's hockey. According to Brenda Andress, the Canadian league's director, the CWHL will start paying players next year and would like to offer a salary of $26,000 to $40,000 within a decade. "We want hockey to be a sustainable career for women, and that they don't have to have another job," Andress says.

In Brooklyn, the Connecticut Whale end up beating the Riveters 3-1. After the game, the Riveters sit sweaty and flushed at card tables near the rink's concession stands, where they sign autographs for a few dozen fans—almost exclusively parents with young daughters. "That's what I want, for a little girl to watch one of our games and know, when I grow up, I can play hockey," Rylan says. "And hopefully, when that girl grows up, she'll be able to make more money playing it." Ⓑ

PUPPY LOVE

How a breed becomes a fad
By Carrie Battan

1. WORD-OF-MOUTH

Five years ago, David Hicks and Naomi Fujinaka decided they wanted a livelier and more affectionate dog than their stoic mastiff. Their research led them to the 2-foot, 60-pound Berger Picard (pronounced *bare-ZHAY pee-CARR*). They were so infatuated they began breeding them on a small scale. In the past few months, however, Hicks and Fujinaka have experienced a surge of unsolicited attention. "The amount of views on our Facebook went through the roof," Hicks says. "Do you have puppies? Do you have puppies? Do you have puppies?"

This is Toucha Fantastic Francis, aka Frani, a 5-and-a-half-year-old Berger Picard from Portland, Ore.

2. RECOGNITION

The surge of interest came after the Berger Picard was recognized by the American Kennel Club, the nonprofit governing the world of purebred dogs in the U.S. To gain official recognition from the AKC, a breed must have an active national club and a gene pool large enough for safe breeding (about 100 dogs). Admission to the registry, which has accrued 189 breeds since 1884, is not only a seal of legitimacy but also brings the breed wider attention. "People are educated about them, so you get these rarer breeds being added to families," says AKC Vice President Gina DiNardo.

The recognition process has ripple effects outside the breeding community, as well. Also recognized this year was the smaller Lagotto Romagnolo, best known for its ability to sniff out truffles growing underground. Alana McGee runs the Truffle Dog Co., which teaches animals and owners how to hunt the precious mushrooms. "A few years ago, there were only a couple hundred Lagottos in the U.S. Now it's easily in the thousands," McGee says. Her business has doubled–if not tripled, she says–since she started it in 2013.

3. PRESS

It used to take a few years for demand to peak. The Havanese was admitted to the AKC in 1996. In 2003 the *New York Times* included one in a story on "Hot Dogs," and breeders were flooded. "Every litter was sold to New York City [residents] for two years," remembers Kathy McCort, a longtime Havanese breeder in Florida. One Manhattan pet shop offered her a guaranteed $1,500 for each puppy she could produce. (Not trusting it, she declined.) Almost two decades later, the Havanese is the 25th-most popular breed in the country.

4. FRENZY

Rising demand entices unscrupulous producers, who take shortcuts like breeding dogs with health problems, diluting the doggy gene pool. Fearing for the dogs' health, members of the national Lagotto chapter were hesitant to even apply to the AKC, McGee says. Hicks has also greeted newfound interest in his beloved breed with caution: "I'm more inclined to scare somebody away from the Picard when they come to me," he says.

PHOTOGRAPH BY DELANEY ALLEN FOR BLOOMBERG BUSINESSWEEK

BUY, SELL, HANG ON YOUR WALL

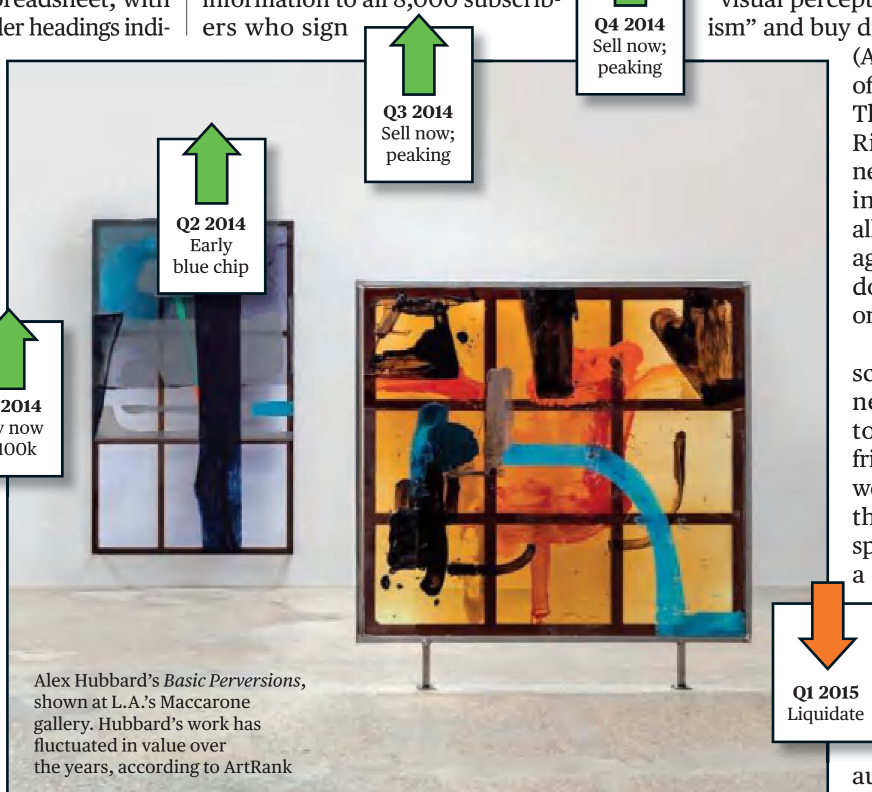
ArtRank gives art the stock market treatment. By Anna Altman

In 2014, Carlos Rivera, a young gallerist in Los Angeles with some hedge fund experience, started a website called sellyoulater.com. It offered something offensive to most serious artists and gallerists: a simple guide for how to make the most money possible buying and selling art.

It took off immediately. The site displayed an unadorned spreadsheet, with artists' names ranked under headings indicating their investment potential. Dan Colen, Walead Beshty, and David Ostrowski, whose mixed media works sell for five or six figures, found themselves categorized as "peaking." Banksy, anonymous yet overexposed, topped the "liquidate" column. Soon after Rivera started the site, he changed its name to ArtRank—a less provocative and, he thought, more professional choice.

Rivera says ArtRank helps new collectors make sound investments in a market that can be extremely lucrative but also maddeningly opaque. Gallerists typically control access to a work, so unless buyers have the right connections, they have no way of knowing whose pieces are selling and for how much. Art advisers take their cues from observing which collectors are at which openings, which artists get prestigious residencies, and which auction houses or fairs sell an artist's work. It's all very cyclical and insidery, making the market prone to volatility.

Rivera's team uses these bits of information, as well as any data it can glean from an artist's CV and other publicly available records (her alma mater, her online presence, auction results), and feeds them into an algorithm that spits out final rankings. These are released quarterly in three waves: initially limited to 10 subscribers such as collectors, curators, and art investment fund managers, who pay $3,500 each quarter to receive the list first. Three weeks later, the site sends out the same information to all 8,000 subscribers who sign up for free. After an additional three days, the list is posted online for anyone to see. So far, the company is tracking more than 40,000 people.



Alex Hubbard's *Basic Perversions*, shown at L.A.'s Maccarone gallery. Hubbard's work has fluctuated in value over the years, according to ArtRank

FREDRIK NILSEN/COURTESY ALEX HUBBARD/MACCARONE

Art adviser Heather Flow says ArtRank appeals to "flippers"—buyers more interested in selling at a profit than building a collection. The artists on Rivera's lists are less than pleased. None would agree to speak on the record. One person on the "early blue chip" list found the site's premise preposterous. "Artists are not trying to meet sales goals," he says.

Still, the boldly transactional nature of the Internet has created cracks in the gallery system. There are now more than 40 companies facilitating the sale of works online. Artsy, a website with venture capital backing, uses an algorithm similar to the music streaming site Pandora to help patrons discover which works they might like to buy. Users can browse by such terms as "political," "visual perception," and "minimalism" and buy directly from the site. (ArtRank only briefly offered works for sale. The site is funded by Rivera's other business ventures, including a company that allows people to leverage art for loans and doesn't make money on its own.)

One ArtRank subscriber, an entrepreneur who asked not to be named so his friends in the art world wouldn't know he uses the service, says he spends about $50,000 a month on purchases. He says he feels capable of discerning patterns among more established artists through auction records and other public information, but he found news about emerging artists elusive. "There's so much volatility right now," he says.

Artist Wyatt Burns, who publicly mocked the site when it first appeared, now says he sees why it might be useful. "Art advising has been around forever, so I think it was natural that a company like ArtRank brought it into the 21st century," he says. "It's crude, but it's going to happen either way, so at least we get to see a little of what is going on behind closed doors." Ⓑ

Road Reads

Eight of fall's best books to take on your holiday travels—and the bags to carry them in. By Camille Perri

Year of Yes: How to Dance It Out, Stand in the Sun and Be Your Own Person

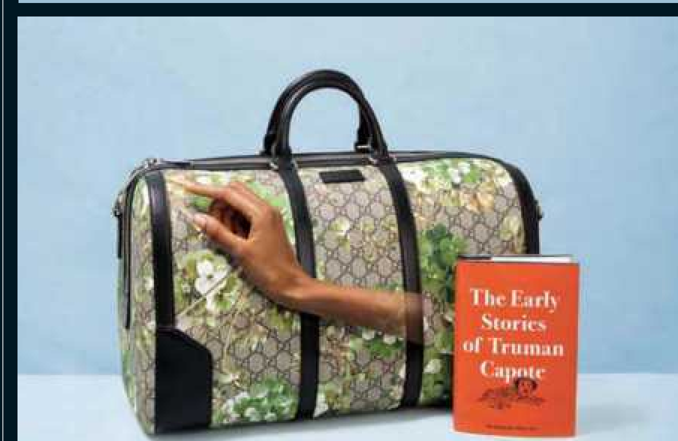
By Shonda Rhimes *(Simon & Schuster, $24.99)*

This memoir/call to arms from the one-woman force behind *Grey's Anatomy*, *Scandal*, and *How to Get Away With Murder* is basically a New Year's resolution between two covers. Wherever you're going, bring it with you in this **Anya Hindmarch Smiley Maxi Featherweight Ebury tote** *($1,445; anyahindmarch.com)* to reinforce the lesson.

Numero Zero

By Umberto Eco *(Houghton Mifflin Harcourt, $24)*

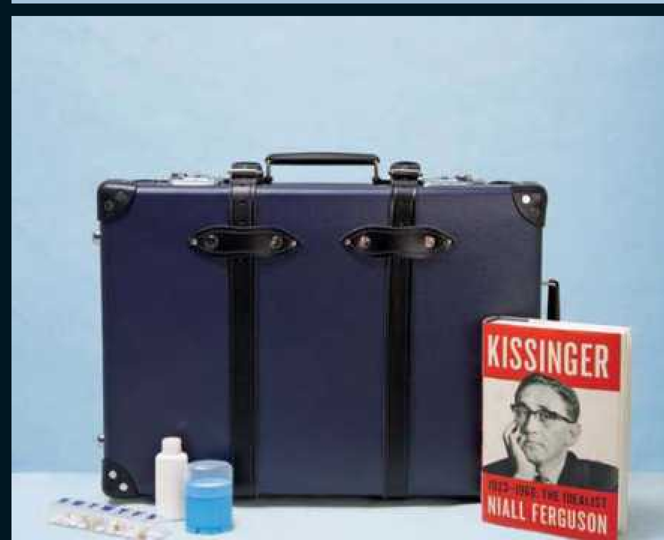
Perfect for an overseas journey. Pack this thriller by the celebrated Italian author inside a briefcase from a celebrated Italian brand–**Giorgio Armani black leather briefcase with top handle,** to be specific *($2,145; armani .com)*–and you're already halfway to where you're going.



The Early Stories of Truman Capote

Foreword by Hilton Als *(Random House, $25)*

Recently unearthed in the New York Public Library Archives, Capote's heartfelt vignettes of human struggle just might make you more compassionate to your fellow passengers. If that doesn't work, let the hydrangeas on this stately **Gucci GG Blooms duffel** *($1,550; gucci.com)* put you in a genteel mood.



Kissinger 1923-1968: The Idealist

By Niall Ferguson *(Penguin Press, $39.95)*

The first volume of this Henry Kissinger biography by the controversial historian, who received unprecedented access to his private papers, comes with one caveat: It's 1,008 pages. Maybe leave it at home unless your idea of a winter vacation involves multiple weeks and a steamer trunk, or this **Globe-Trotter Centenary 21-inch trolley case** *($1,930; mrporter.com)*.

PHOTOGRAPHS BY JORDAN TIBERIO FOR BLOOMBERG BUSINESSWEEK

The Grownup

By Gillian Flynn *(Crown, $9.99)*

A bite-size scary story from the author of *Gone Girl* that you can devour while waiting at airport security. When you're done, stash it in this zippy **Rimowa Topas mini trolley** *($815; worldtraveler.com)* and just try to fall asleep on the plane.

Hotels of North America

By Rick Moody *(Little, Brown, $25)*

A protagonist whose life story is told through online reviews at (the fictional) rateyourlodging.com. If you can relate, you deserve new luggage: Upgrade to this handsome **Ghurka Charlie II No. 595 overnight bag** *($1,595; ghurka.com)*.

M Train

By Patti Smith *(Knopf, $25)*

This funky, fringed **Wendy Nichol Basket Whip bag** *($1,995; wendynicholnyc.com)* channels the spirit of the music legend's second memoir, a meditation on travel, literature, and coffee that glides between dreams and reality, past and present. The mystical rhythms make it ideal reading for rail travel.

Welcome to Night Vale: A Novel

By Joseph Fink and Jeffrey Cranor *(Harper Perennial, $19.99)*

From the creators of the hit podcast comes this mystery about a town where ghosts, angels, aliens, and government conspiracies are just how it goes. If the paranoia starts getting to you, stick it in this camouflage **Longchamp Le Pliage Néo Fantaisie backpack** *($370; longchamp.com)* and disappear into the night.

Market editor: Erica Blumenthal

Chopra in 2000

in 2008

and in 2015

FBI'S MOST WATCHED

ABC is banking on Quantico *to be an international hit*
By Claire Suddath

On its own, ABC's *Quantico* is pretty unremarkable. It's a salacious, binge-watchable show that will feel instantly familiar to anyone who's seen more than five minutes of any other ABC drama in recent years. Want distractingly good-looking young people thrown together in a high-stress work environment, in this case the FBI National Academy? *Quantico*'s got 'em. Frenzied, ersatz *Homeland* plots resolved by end-of-episode twists? Yup. Love (OK, lust) triangles? Roger that.

But *Quantico* has one important asset that's putting it ahead of just about every other new fall drama: its lead, Priyanka Chopra. Relatively unknown in the U.S. before now, Chopra is a former Miss World and one of the biggest stars in Bollywood—two of her films are among the highest-grossing in Indian history.

Chopra plays Alex Parrish, a hyper-intelligent FBI special agent who's either responsible for the largest terrorist attack in the U.S. since Sept. 11 or has been framed for it—by an FBI colleague, no less. Chopra's fame is boosting *Quantico*'s profile in the international market, which ABC is counting on to gain an edge over the competition at home.

More than 7.1 million people in the U.S. watched *Quantico*'s premiere on Sept. 27, making it the network's top debut of the season. According to entertainment news site Deadline, it was this fall's second-most-discussed new show online, trailing only *The Muppets*. "I and the other Indian people I know got so excited when we saw [Chopra] in the show's ads," says Gitesh Pandya, editor of Box Office Guru, which tracks the Indian and U.S. film industries. "We don't normally see one of our movie stars plastered all over buses and billboards in America."

PRIYANKA CHOPRA IS ALL BUT UNKNOWN IN THE U.S., BUT SHE'S BIG BUCKS IN INDIA

The series has mostly held steady so far, at more than 5 million viewers per episode. That's about two-thirds the size of the audience for *Scandal*, another soapy ABC hit, but still impressive in today's market, where streaming services are sucking viewers away from traditional television and a new show is lucky to pull in a million or two viewers.

International markets could help networks compensate for lost eyeballs. "It's a good way to make sure a new series makes money," says Tim Westcott, TV programming analyst at IHS Technology. U.S. television shows usually air abroad six months to a year after they do stateside, so international buyers can see which ones are hits. Because Chopra is a proven star, *Quantico* is shown with only a one-week delay in India, enough time for censors to remove any harsh language or suggestion of nudity. (Those censors are strict: Indian network Star World blurred an image of a marble sculpture in an episode of *Downton Abbey*.) Indian television is an $8.6 billion business, according to PwC. That's small compared with the $100 billion American market, but there's plenty of room to grow. According to a 2011 census, not quite half of Indian households own a TV, up from less than a third in 2001.

Quantico is running or scheduled to run in dozens of countries, many in Southeast Asia, and has been dubbed in 44 languages. ABC isn't the only network rushing to exploit those markets: CBS is making a TV version of *Rush Hour* featuring John Foo, a British actor of Chinese-Irish descent and the star of many Asian action movies.

Quantico was created as a vehicle for Chopra, but Alex, her character, could have been played by an actor of any ethnicity. "You're starting to see a normalization of the Indian face," says Box Office Guru's Pandya. "We're not just taxi drivers or convenience store owners anymore." *Quantico* is awash in other clichés. In the third episode, Alex's love interest, a fellow FBI trainee named Ryan, tells her, "You take care of everyone else," he says. "Have you ever let anyone take care of you?" Ⓑ

PHOTO ILLUSTRATION BY 731; PHOTOS: UPPA/ZUMA PRESS; INDRANIL MUKHERJEE/AFP/GETTY IMAGES; PHILLIPE BOSSE/ABC/GETTY IMAGES

DOUG JACOB

32, founder of JWalk; partner at Toro restaurant, New York

What's JWalk?
It's a full-service creative shop. We focus on marketing and advertising for brands in luxury, fashion, consumer products, beauty, and hospitality. I started it in 2011.

Do you lose sunglasses a lot?
Yes! I go through probably 25 pairs a year.

Most people who do that stop wearing designer brands.
I know. I used to buy bulk, but now I lose one, replace one.

What's your look?
I'd say elevated casual. I always want to be seen as the creative in the room, and then surprise [people] with my knowledge of business. I love fashion, and I'm a basics guy.

Why that shirt?
Fabric. These guys use only the best materials, so the draped neckline holds on to its construction: You wash it, and it doesn't hang below your nipples. Given my industry, I get to see a lot of these brands from the start, and I follow them. I tend to look for creativity in basics—the small nuances.

How does a normal day go?
I get to the agency about 7 a.m., then I'm home at 7 p.m. to give my 5-year-old twin daughters a bath. I'm back at the restaurant four days a week from 9 p.m. until midnight or 1 a.m.

Great boots.
They're handmade, from Italy. I got them in three colors.

What do the other restaurant partners do?
One focuses on operations, and two more are James Beard-award-winning chefs. I focus on the money, the real estate, the long-term business strategy, and the brands.

Interview by Arianne Cohen

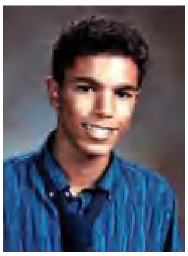
PHOTOGRAPH BY CHRISTOPHER LEAMAN FOR BLOOMBERG BUSINESSWEEK

How Did I Get Here?

MICHAEL HOUSTON

Chief executive officer, Grey North America

Junior high class photo, 1987



"I blended into all the cliques. I was editor of the yearbook and newspaper, on the drama team, in track and field, and spent time with the druggie dropouts."

Education

Lawrence High School, Lawrence, Kan., class of 1990

University of Kansas at Lawrence, class of 1994

Graduation from the University of Kansas

"I've known I wanted to work in this business since the sixth grade."

As an intern at Chiat/Day, with a colleague

Work Experience

1994
Intern, Chiat/Day

1995–97
Account coordinator, Young & Rubicam

1997–98
Director of marketing, Landor Associates

1998–2000
Vice president for North American business development, Young & Rubicam

2000–01
President, & Partners

2001–02
Director of client relations, Elias Arts

2002–07
Partner, director for business development, Kirshenbaum Bond & Partners

2007–12
Executive VP, global chief marketing officer, managing director, chief operating officer, Grey New York

2013–Present
CEO, Grey North America

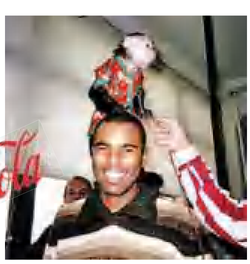
"I loved the high stakes and teamwork and that we could be as creative as needed. All of that was addictive for me."

In his first office at Young & Rubicam

"We started our own brand consultancy firm. We thought it was absurd there were so many marketing companies named after founders, even though the partners do all the work."

"My partner and I just weren't aligned. I sold my portion back to him and went on my merry way."

"Over the last seven years we've doubled our revenue and profitability and gone from 300 employees to more than 1,000."



With a monkey on his head at Kirshenbaum Bond & Partners

"We won more than $250 million in billings: BMW, Diageo, Coca-Cola, PBS. I don't take credit for all of our success, but I do take credit for being the head of business development under which that success happened."

"I was charged with changing the brand. My thought was, if we can do this, there will be no greater story; if it bombs, everyone will say, 'That was a tough proposition.' While I was running new business, we won 65 out of 72 pitches."

Life Lessons

1. "Everything has an expiration date, including organizations and people." **2.** "Leave the party before the lights come on." **3.** "Circuitous career routes are not necessarily bad."

Courtesy subject (6)

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